

## SEARCH REQUEST FORM

766

Examiner # (Mandatory): 76233 Requester's Full Name: Chongy H. Kim  
 Art Unit 3682 Location (Bldg/Room#): PK5-6Y17 Phone (circle 805) 306 308 0922  
 Serial Number: 09/172577 Results Format Preferred (circle): PAPER DISK E-MAIL  
 Title of Invention Inert Gas Blanket for Protection from Oxidation  
 Inventors (please provide full names): R. H. Hall & T. W. Selby

Earliest Priority Date: \_\_\_\_\_

Keywords (include any known synonyms registry numbers, explanation of initialisms):

Oxidation, Lubricant (cation, cate), Inert gas  
 (such as Nitrogen), Tribology,

## Search Topic:

Please write detailed statement of the search topic, and the concept of the invention. Describe as specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples of relevant citations, authors, etc., if known. You may include a copy of the abstract and the broadcast or most relevant claim(s).

Provides inert gas into a working machine to protect (or blanket) the lubricant (oil or grease) from oxidizing. (To make the lubricant last longer)

03-20-2000 P04:50

## STAFF USE ONLY

Searcher: KOL  
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☐ Westlaw  
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(FILE 'HOME' ENTERED AT 14:58:56 ON 21 MAR 2000)

FILE 'REGISTRY' ENTERED AT 14:59:38 ON 21 MAR 2000

L1 0 S (HE OR AR OR KR OR XE OR RN)/RN  
L2 22816 S HE OR AR OR KR OR XE OR RN  
L3 12 S (HE OR AR OR XE OR RN OR KR)/CN  
L4 1 S XN/CN

FILE 'CAPLUS' ENTERED AT 15:01:16 ON 21 MAR 2000

L5 96 S L3 OR L4  
L6 71098 S ANTI()OXID? OR ANTIOXID?  
L7 1 S L5 AND L6

FILE 'TRIBO' ENTERED AT 15:07:43 ON 21 MAR 2000

L8 16 S (PREVENT? OR PROHIBIT? OR STOP?) (2A) (OXIDAT?)  
L9 1565 S OXIDAT?  
L10 34197 S LUBRICA? OR OIL OR GREAS?  
L11 355 S OXIDI?  
L12 0 S (L3 OR L4) AND (L6 OR L9)  
L13 710 S HELIUM OR HE OR XENON OR XN OR ARGON OR AR OR KRYPTON OR KR  
O  
L14 3 S (NOBLE OR INTERT) (2A)GAS?  
L15 0 S INTERT(2A)GAS?  
L16 55 S INERT(2A)GAS?  
L17 20 S (L13 OR L14 OR L16) AND (L9 OR L11 OR L6) AND L10  
L18 30 S (L13 OR L14 OR L16) (5A)L10  
L19 39183 S MACHIN?  
L20 18 S L18 AND L19  
L21 0 S L20 NOT L18

L20 ANSWER 1 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 254578 TRIBO  
TI Journal center orbits in piston engine bearings.  
AU Ross, J.M.; Slaymaker, R.R.  
CS Society of Automotive Engineers (SAE), Warrendale, Pa., United States  
NR SAE-690114  
SO 1969, Tech. Pap., 23 pp.  
With 3 refs.  
SO Conference: SAE Int. Automotive Engineering Congr. & Expos. 1969,  
Detroit, Mich., United States, 13 Jan 1969 - 17 Jan 1969  
Organizer: SAE  
DT Conference Article  
LA English  
AB The classic problem of dynamically loaded bearings is dealt with.  
Computer-assisted analysis of sleeve bearing operation in reciprocating  
engines is presented which describes improved analytical tool for  
evaluating location of journal within its bearing for incremental values  
through operating cycle. Prediction of journal orbits described results  
from synthesis of previously developed lubrication theory. Its  
technological contribution rests in manipulation of theory to provide  
realistic model for reciprocating engine bearings. An automotive

Karen Lehman EIC 3600

engineer, aided by a computer, can use the included computation procedure

to get a reasonable picture of bearing performance. He can discover the effect of changes in speed, power, dimensions, and oil on potential trouble spots and he can see the difference in behavior of main bearings, crankpin bearings, and wrist pin bushings. Typical orbit diagrams, based on this procedure, are included for comparison with photographs of test bearings for which the journal paths were drawn.

L20 ANSWER 2 OF 18 TRIBO COPYRIGHT 2000 BAM

AN 253215 TRIBO

TI Research and development of high-performance axial-flow turbomachinery.

AU Mc Cabe, J.T.; Shapiro, W.; Chu, T.Y.

CS National Aeronautics and Space Administration (NASA), Washington, D.C., United States

NR NASA-CR-802

SO 05.1968, Rep., 249 pp.

DT Report

LA English

AB Design of backup gas bearings; report contains detailed analysis and subsequent design of gas-lubricated bearing system, using working fluid ~~argon~~ as bearing lubricant, consisting of two tilting-pad journal bearings with spiral groove main thrust bearing for 50,000 rpm Brayton cycle turbine-compressor to be used in dynamic space power system; after establishing preliminary design based on steady state considerations, non-linear dynamical analysis examined loading response of rotor/bearing system; stability of double acting thrust bearing was investigated.

L20 ANSWER 3 OF 18 TRIBO COPYRIGHT 2000 BAM

AN 253176 TRIBO

TI Water-lubricated thrust bearings for ~~helium~~ circulator.

AU Shapiro, W.

SO Bearing and seal design in nuclear power machinery. ((Proceedings)). Editor(s): Burton, R.A.

New York, N.Y., United States: American Society of Mechanical Engineers (ASME) 1967, p. 140-167

Ser. Title: ASME-G-56

SO Conference: ASME Symp. 1967 Lubrication in Nuclear Application, Miami Beach, Fla., United States, 5 Jun 1967 - 7 Jun 1967

Organizer: ASME

DT Book Article; Conference

LA English

AB Design study of water lubricated thrust bearings for ~~helium~~ circulator used in gas-cooled reactor nuclear power plant is discussed; configurations investigated included hydrodynamic and hybrid bearing; analytical treatment, configuration concept, and predicted performance are presented for each bearing; matrix-column numerical method for solving Reynolds' equation in polar coordinates and for handling Rayleigh steps is developed; qualitative and quantitative comparisons accentuate advantages and disadvantages of each bearing type and provide basis for recommended selection.

L20 ANSWER 4 OF 18 TRIBO COPYRIGHT 2000 BAM

AN 245446 TRIBO

TI Use of an acoustic emission method to study the working capacity of bearings with Dimolit solid lubricant coatings in a ~~helium~~ atmosphere.

AU Anapol'skii, A.B.; Bogoyavlenskii, R.G.; Nikiforov, Yu.D.; Sarychev, G.A.; Shakhnovskii, M.I.; Shchavelin, V.M.

SO Trenie Iznos (1988), Vol.9 (No. 1) p. 82-89  
CODEN: TRIZD6

DT Journal  
LA Russian

AB The friction (at 20-200 deg C and load 2-8 MPa He) of 2 elements coated with a MoS<sub>2</sub>-based solid lubricant generates acoustic signals. The intensity and amplitude of these signals depend on sliding rate, load, the degree of coating wear, and time. However, the types of amplitude distribution do not change with coating wear. The foregoing pertains to the monitoring of **lubricating** coatings in bearings in He-cooled nuclear reactors.

L20 ANSWER 5 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 238965 TRIBO

TI Measurements of impurity concentration for a helium compressor.  
AU Yamamura, H.; Kashiwara, S.; Watanabe, Y.; Tada, E.; Fukusada, K.; Shimoda, T.; Masuda, K.; Aoki, M.; Suda, S.  
SO Teion Kogaku (1994), Vol.29 (No. 1) p. 28-33  
CODEN: TEKODS

DT Journal  
LA Japanese

AB **Lubricant** for a **helium** compressor requires not only **lubrication** but also few evolving rate of impurities, because helium refrigerators should be operated stably and continuously for a long time. In this investigation, evolving gases of different types of lubricant were measured to pay attention to heatproof and evolving gases at present operating compressors. It was found that specially refined mineral oil was suitable at the point of heatproof and economy as **lubricant** for a **helium** compressor.

L20 ANSWER 6 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 233291 TRIBO

TI Acoustic irradiation and sliding bearing control.  
AU Shavelin, V.M. (Schavelin, V.M.); Shakhnovskii, M.U. (Schachnovsky, M.U.); Sarychev, G.A.; Revenko, B.M.  
SO EUROTRIB 89: Proceedings of the 5th International Congress on Tribology. Vol. 4.  
Editor(s): Holmberg, K.; Nieminen, I.  
Espoo, Finland: Finnish Society for Tribology, VTT (KOT) 1989, p. 102-108  
With 1 ref.  
ISBN: 952-90080-1-5

SO Conference: 5. Int. Congr. 1989 Tribology (EUROTRIB '89), Espoo, Helsinki, Finland, 12 Jun 1989 - 15 Jun 1989  
Organizer: ITC; Finnish Soc. Tribol.

DT Book Article; Conference  
LA English

AB Monitoring transient sliding friction according to real state is an actual problem of modern technique. One of the perspective methods allowing to solve this problem is the method based on the registration and analysis of acoustic emission whose high-frequency fraction is an acoustic emission due to different processes taking place in surface layers of bodies at their friction interaction. The method has a number of advantages - it is inertialess, there is no necessity in supplying energy, the registering apparatus is easily conjugated with the means of computing technique. Results are presented of simulative tests with a MoS<sub>2</sub>-**lubricated** plain bearing in **helium** and a bearing made of graphite-fluorine plastic composition under conditions of water lubrication, experiencing sudden emergency situations.

L20 ANSWER 7 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 231252 TRIBO

TI Static characteristics of gas-**lubricated** slider bearings operating in a **helium**-air mixture.  
AU Ohkubo, T.; Fukui, S.; Kogure, K.  
CS American Society of Mechanical Engineers (ASME), New York, N.Y., United

States  
NR ASME-89-Trib-13  
: SO 1989, Pap.  
SO Trans. ASME: J. Tribol. (1989), Vol.111 (No. 4) p. 620-627  
With 17 refs.  
CODEN: TAJTRI  
SO Conference: STLE/ASME Joint Tribology Conf. 1989, Fort Lauderdale, Fla.,  
United States, 16 Oct 1989 - 19 Oct 1989  
Organizer: STLE; ASME  
DT Conference Article; Journal  
LA English  
AB Flying head sliders for magnetic disk storage devices are one  
application  
of self-acting gas-lubricated bearings. The flying characteristics of  
these sliders are strongly influenced by the physical properties of the  
gases used. This paper outlines experimental investigations of the  
static  
characteristics of self-acting gas-lubricated slider bearings  
operating in a ~~helium~~-air mixture. The experimental results are  
compared with numerical results obtained by solving a modified Reynolds  
equation and a generalized lubrication equation based on an equivalent  
molecular mean free path (MMFP) and on an equivalent viscosity derived  
from molecular gas dynamics. At any mole ratio of air  $\alpha$ , the values  
of the equivalent MMFP are generally expected to be smaller than those  
of  
the MMFP derived from linear interpolation, whereas the values of  
equivalent viscosity are expected to be larger. The numerical results  
agree well with the experimental results within the range of  $\alpha$  from  
1.0 to 0.6. Lower values of  $\alpha$  give a bigger difference between  
numerical and experimental results, and make the experimental results  
lower than the numerical results. Moreover, results of a generalized  
lubrication equation based on the Boltzmann equation give a closer  
prediction or qualitative tendency to the experimental results than do  
those based on the modified Reynolds equation.

L20 ANSWER 8 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 230717 TRIBO  
TI Fluid film lubrication. Osborne Reynolds Centenary ((Conference  
proceedings)).  
AU Editor(s): Dowson, D.; Taylor, C.M.; Godet, M.; Berthe, D.  
SO Amsterdam, Netherlands; Oxford, United Kingdom; New York, N.Y., United  
States; Tokyo, Japan: Elsevier Sci. Publ. 1987, X+696 pp.  
Ser. Title: Tribology Ser., Vol. 11  
ISBN: 0-444-42856-9  
SO Conference: 13. Leeds-Lyon Symp. 1986 Fluid Film Lubrication, Leeds,  
United Kingdom, 8 Sep 1986 - 12 Sep 1986  
Organizer: Leeds Univ.; INSA; Inst. Tribol. Leeds  
DT Book; Conference  
LA English  
AB The thirteenth Leeds-Lyon Tribology Symposium was devoted to the topic  
of  
fluid film lubrication in celebration of the centenary of the  
publication  
of the classical paper by Professor Osborne Reynolds in which **he**  
identified the mechanism of hydrodynamic **lubrication**. There  
were 21 sessions at the symposium, with some 70 papers presented.  
Sessions were devoted to: history; journal bearings; thrust bearings;  
elastohydrodynamic lubrication; lubricant rheology; bearing dynamics;  
biotribology; superlaminar flow in bearings; bearing analysis; oil film  
instability; gas bearings; seals; **machine** elements (ring-oiled  
bearings, cams and tappets, rolling bearings). The individual papers are  
indexed separately.

L20 ANSWER 9 OF 18 TRIBO COPYRIGHT 2000 BAM

AN 227853 TRIBO  
 TI Wear of gear drives with a magnetic-powder **lubricant** in a  
 : **helium** atmosphere of controlled composition.  
 AU Arkhipov, I.Ya.; Vasil'ev, I.V.; Drozdov, Yu.N.; Pavlov, V.G.;  
 Pechnikov,  
 V.S.  
 SO Mashinovedenie (1988) (No. 4) p. 51-54  
 CODEN: MSNVAE  
 DT Journal  
 LA Russian  
 AB Wear of conjugated nitrided gear drives of steel 20Kh3MVF with magnetic  
 powder lubricant, and of 40Kh13 steel gears with MoS2 (type Dimolit)  
 coating paired with 20Kh3MVF steel gears hardened by nitriding was  
 studied. Nitrided gears are superior to MoS2 coated gears and satisfy  
 requirements for prolonged service in He atmosphere.

L20 ANSWER 10 OF 18 TRIBO COPYRIGHT 2000 BAM  
 AN 225750 TRIBO  
 TI Temperature stability of boundary lubricant films in various gaseous  
 media.  
 AU Matveevsky, R.M.; Lazovskaya, O.V.  
 SO Wear (1976), Vol.36 (No. 1) p. 73-78  
 With 6 refs.  
 CODEN: WEARAH  
 DT Journal  
 LA English  
 AB Experiments were carried out to investigate the temperature stability in  
 friction of nonpolar mineral and silicone oils with and without  
 additives  
 in the four-ball **machine** in various gaseous media (air,  
 helium). Increased temperature stability was observed in helium in  
 comparison with air. Phosphorus or chlorophosphorus additives increase  
 the efficiency of the **oils** especially in a **helium**  
 atmosphere.

L20 ANSWER 11 OF 18 TRIBO COPYRIGHT 2000 BAM  
 AN 224904 TRIBO  
 TI Some composite bearing and seal materials ((with self-lubricating  
 plasma-sprayed composite coatings)) for gas turbine applications - a  
 review.  
 AU Sliney, H.E.  
 CS American Society of Mechanical Engineers (ASME), New York, N.Y., United  
 States  
 NR ASME-89-GT-144  
 SO 1989, Pap.  
 SO Trans. ASME: J. Engng. Gas Turbines Power (1990), Vol.112 (No. 4) p.  
 486-491  
 With 19 refs.  
 CODEN: JENGTP  
 SO Conference: 34. Int. Gas Turbine and Aeroengine Congr. & Exhib. 1989,  
 Toronto, Ont., Canada, 4 Jun 1989 - 8 Jun 1989  
 Organizer: ASME  
 DT Conference Article; Journal  
 LA English  
 AB Plasma-sprayed composite coatings with favorable tribological properties  
 from 25 to 900 deg C are discussed. The performance of these coatings in  
 simple tribological bench tests is described. Mixtures of calcium  
 fluoride, barium fluoride, and silver have shown promise in thin fused  
 coatings and in plasma-sprayed coatings for lubricating from room  
 temperature to at least 760 deg C in hydrogen, **helium**, and air.  
**Lubrication** is more effective in hydrogen than in air, but the  
 coatings have been successful in long-term start-stop testing as air  
 bearings at 650 deg C. The maximum useful temperature of these coatings  
 is estimated to be about 900 deg C (just below the melting point of

silver: 961 deg C). Plasma-sprayed composite coatings of metal-bonded chromium carbide, calcium fluoride/barium fluoride eutectic, and silver have been successful as seal and bearing lubricants in component testing under conditions considered to be relevant to gas turbine applications. Examples are also given of their performance in high-speed sliding contact seals, as Stirling cylinder liner materials, and as backup lubricants for compliant foil gas bearings.

L20 ANSWER 12 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 222933 TRIBO  
TI Thirteenth Leeds-Lyon Symposium on Tribology ((1986)). ((Conference report)).  
AU Lidgitt, P.J.  
SO Tribol. Int. (1986), Vol.19 (No. 6) p. 324-326  
CODEN: TRBIBK  
SO Conference: 13. Leeds-Lyon Symp. 1986 Fluid Film Lubrication, Leeds, United Kingdom, 8 Sep 1986 - 12 Sep 1986  
Organizer: Leeds Univ.; INSA; Inst. Tribol. Leeds  
DT Journal; Conference  
LA English  
AB The thirteenth Leeds-Lyon Tribology Symposium was devoted to the topic of

fluid film lubrication in celebration of the centenary of the publication of the classical paper by Osborne Reynolds in which he identified the mechanism of hydrodynamic lubrication. The proceedings contain more than seventy papers, covering the entire spectrum of fluid film lubrication. Of particular interest is the detailed consideration of a wide range of machine elements: bearings, seals, cams, rolling elements, as well as the in-depth, state-of-the-art, analytical contributions.

L20 ANSWER 13 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 217702 TRIBO  
TI Coatings of solid lubricants for use with ball bearings in hostile environments.  
Festschmierstoff-Beschichtungen in Kugellagern fuer besondere Einsatzbedingungen.  
AU Ruebinger, W.  
SO Verschleiss- und Korrosionsschutz durch ionen- und plasmagestuetzte Vakuumbeschichtungstechnologien. ((Vortraege)).  
Editor(s): Gabriel, H.M.  
Darmstadt, Germany, Federal Republic of: Technische Hochschule Darmstadt (THD) 1983, p. 159-184  
Ser. Title: THD Schriftenr. Wiss. Tech., Bd. 20  
ISBN: 3-88607-027-1  
SO Conference: Int. Tagg. 1983 Verschleiss- und Korrosionsschutz durch ionen- und plasmagestuetzte Vakuumbeschichtungstechnologien, Darmstadt, Germany, Federal Republic of, 15 Mar 1983 - 16 Mar 1983  
Organizer: TH Darmstadt  
DT Book Article; Conference  
LA German  
AB Solid lubricants for ball bearings must be considered, if e.g. at elevated temperatures, in high purity gases, in vacuum or in radioactive surroundings, grease or oil loose their lubrication action or free undesired emissions. The present investigation is concerned with solid-lubricated ball bearings under the following conditions: up to

high loading, medium speeds of rotation up to about 1500 rpm, temperatures up to 300 deg C in an inert gas atmosphere. To lubricate the heavy-loaded ball-ring contacts, the rings are MoS2-coated by sputtering, galvanic deposition, spraying or rubbing. The paper is concerned mainly with sputtered MoS2 films. To lubricate the sliding contacts between balls and cage, various types of coated steel

cages and polymer cages made of polyamide, PTFE and polyimide have been developed and tested. Using strongly lubricating polymer cage materials, a remarkable increase of service life can be attained because of partially replacement of the worn MoS2-coatings by transferred films of cage material.

L20 ANSWER 14 OF 18 TRIBO COPYRIGHT 2000 BAM

AN 217435 TRIBO

TI Characteristic of grooving wear on end-cutting-edge and effect of cutting

fluids in finish turning of steels.

AU Sakuma, K.; Fujita, T.

SO Schmierstoffe in der Metallbearbeitung/Lubrication in metal working.

Vol.

II.

Editor(s): Bartz, W.J.; Wolff, J.

Ostfildern, Germany, Federal Republic of: Technische Akademie Esslingen (TAE) 1982, p. 98/1-98/5

SO Conference: 3. Int. Colloq. 1982 Lubricants in Metalworking, Ostfildern, Germany, Federal Republic of, 12 Jan 1982 - 14 Jan 1982

Organizer: TAE; GfT

DT Book Article; Conference

LA English

AB In order to investigate the grooving wear (boundary wear) on end-cutting-edge of tools, finish turning tests of steel were made using carbide tools, and various kinds of cutting fluids (emulsion type fluid, highly chlorinated oil, standard cutting oil, light oil, spindle oil) or argon gas or dry conditions. From the results of the experiments, it can be recognized that the cutting fluids are very much effective on reducing grooving wear. Especially, it was found that spindle oil having moderate permeability and lubricating property gave prominent effects. Roughness of the machined workpieces under the supply of spindle oil was found to be approximately a half of that attainable under the dry condition. Grooving wears observed under the existence of cutting oils having higher viscosities were found comparatively high. Furthermore, it was found that the repressive effects of water based cutting fluid on the generation of grooving wear were very small.

L20 ANSWER 15 OF 18 TRIBO COPYRIGHT 2000 BAM

AN 216582 TRIBO

TI Radial-shaft seals for high static and dynamic eccentricities.

AU Rapp, H.; Ehrman, P.

SO Lubric. Engng. (1985), Vol.41 (No. 7) p. 405-408

CODEN: LUENAG

SO Conference: ASLE 39. Annu. Meet. 1984, Chicago, Ill., United States, 7 May 1984 - 10 May 1984

Organizer: ASLE

DT Journal; Conference

LA English

AB Specialized applications and increasingly stringent requirements for reliability are influencing new developments of seals for rotating shafts. Conventional oil seals in many cases can no longer cope with the current application conditions, particularly for automotive and agricultural sealing requirements. The paper describes the development, design, and application parameters of a new radial lip-type shaft seal (oil seal) called quote HE quote seal which widens the commonly accepted application limits of conventional oil seals in relation to shaft-to-bore offset and dynamic shaft runout. Functional tests confirm the theories presented. The results of performance tests conducted in standard test rigs show that offsets of up to 1.0 mm and shaft runouts of up to 2.0 mm TIR can be effectively sealed by this new oil seal without leakage.



L20 ANSWER 16 OF 18 TRIBO COPYRIGHT 2000 BAM  
 AN 208395 TRIBO  
 TI High Knudsen number molecular rarefaction effects in gas-lubricated slider bearings for computer flying heads.  
 AU Mitsuya, Y.; Ohkubo, T.  
 CS American Society of Mechanical Engineers (ASME), New York, N.Y., United States  
 NR ASME-86-Trib-45  
 SO 1986, Pap.  
 SO Trans. ASME: J. Tribol. (1987), Vol.109 (No. 2) p. 276-282  
 CODEN: TAJTRI  
 SO Conference: ASME/ASLE Tribology Conf. 1986, Pittsburgh, Pa., United States, 20 Oct 1986 - 22 Oct 1986  
 Organizer: ASME; ASLE  
 DT Conference Article; Journal  
 LA English  
 AB The paper presents a study into the gas lubrication capability of an ultra-thin 0.025  $\mu$ m film (converted value for ambient air film). The experimental results obtained using subambient **helium** as the **lubricating** film are compared with the calculated results using the modified Reynolds equation considering flow slippage due to the molecular mean free path effects. This comparison confirms that the slip flow model holds true within the range of the present experiments, and that the modified Reynolds equation is applicable for designing the computer flying heads operating at such thin spacing. The reason for the excellent agreement is discussed considering the locality of rarefaction effects on the lubricating surfaces and the anisotropy of these effects between the film thickness and the slider width.

L20 ANSWER 17 OF 18 TRIBO COPYRIGHT 2000 BAM  
 AN 205776 TRIBO  
 TI Sliding wear and transfer ((unlubricated (dry) and **lubricated** sliding wear tests in **argon** and in air using LFW-1 block-on-ring test **machines**; rings of type 440C stainless steel, M2 tool steel, carburized AISI-SAE 8619 steel plated with chromium or coated with TiB<sub>2</sub>, and carburized AISI-SAE 1018 steel; test blocks of Cu-Ni, Cu-Al and Cu-Al<sub>2</sub>O<sub>3</sub> alloys; solution of stearic acid in dodecane, dibasic acid ester (MIL-L-7808) and dimethyl silicone used as lubricants)).  
 AU Heilmann, P.; Don, J.; Sun, T.C.; Rigney, D.A.; Glaeser, W.A.  
 SO Wear of materials 1983. ((Proceedings)).  
 Editor(s): Ludema, K.C.  
 New York, N.Y., United States: American Society of Mechanical Engineers (ASME) 1983, p. 414-425  
 Ser. Title: ASME-H-00254  
 SO Wear (1983), Vol.91 (No. 2) p. 171-190  
 CODEN: WEARAH  
 SO Conference: Int. Conf. 1983 Wear of Materials, Reston, Va., United States, 11 Apr 1983 - 14 Apr 1983  
 Organizer: ASME; ASTM; AIME; ASM; ASLE; SPE; Amer. Ceram. Soc.  
 DT Book Article; Journal; Conference  
 LA English  
 AB It is well known that transfer of material from one component of a sliding pair to the other occurs in many tribological systems. In the present paper the authors describe their observations on transfer material and on debris particles. Detailed structural and chemical information has been obtained by using optical microscopy, scanning electron microscopy, transmission electron microscopy (TEM), scanning TEM and fluorescence analysis using energy-dispersive techniques (energy-disperse analysis of X-rays) and wavelength analysis. The results show a clear connection between the transfer layer and the generation of

loose wear debris for both unlubricated and lubricated sliding. Evidence of delamination of base material has not been observed in this work.

L20 ANSWER 18 OF 18 TRIBO COPYRIGHT 2000 BAM  
AN 151398 TRIBO  
TI Tests of a sputtered MoS2 lubricant film in various environments ((test components: miniature precision ball bearings, rings and blocks; atmospheres: laboratory air, pure **helium**, vacuum; perfluoroalkylpolyether **oil**)).  
AU Vest, C.E.  
SO Lubric. Engng. (1978), Vol.34 (No. 1) p. 31-36  
CODEN: LUENAG  
DT Journal

- L17 ANSWER 1 OF 20 TRIBO COPYRIGHT 2000 BAM  
 AN 249219 TRIBO  
 TI Products of the **oxidative** dehydrocondensation of alkylarylamines and aryl phosphates in **oils** and **lubricants** based on poly-alpha -olefin **oil**.  
 AU Sosulina, L.N.; Zarubina, V.I.; Patrikeeva, M.L.  
 SO Neftepererab. Neftekhim., Moskva (1989) (No. 12) p. 16-18  
 CODEN: NNNSAF  
 DT Journal  
 LA Russian  
 AB A product of the **oxidative** dehydrocondensation of di-**Ar** amines with **Ar** phosphates was evaluated as an additive for poly(alpha -olefin) **lubricating oil** and Li **lubricating grease** based on this **oil**. This product is a multifunctional additive; it increases the thermooxidative and tribochemical stability of the **oil** and increases its antiwear and protective properties. The additive better stabilizes the **oil** than either the amine or the **Ar** phosphate alone.
- L17 ANSWER 2 OF 20 TRIBO COPYRIGHT 2000 BAM  
 AN 245057 TRIBO  
 TI Ion beam modification of molybdenum sulfide (MoSx) films on metals.  
 AU Mikkelsen, N.J.; Soerensen, G.  
 SO Mater. Sci. Engng. A: Struct. Mater. Prop. Microstruct. Process. (1988, publ. 1989), Vol.A115 p. 343-347  
 CODEN: MSAPE3  
 DT Journal  
 LA English  
 AB Ion beam modifications of sputtered MoSx films resulted in a considerable improvement of their service life. The structural and geometrical changes of sputtered MoSx films exposed to **inert gas** ion beams with energy in the hundreds of keV range and at doses of 1E+15 to 1E+16 ions/cm2 are discussed. The friction coefficient of the sputtered MoSx films in a dry atmosphere was ca. 0.04 both prior to and after ion bombardment, but the sliding life increased by a factor of 5. Two new approaches with the purpose of obtaining low-friction metal surfaces are reported. In the 1st approach, Mo is immersed as anode in a nonaqueous sulfide-containing solution. Although in principle similar to anodic **oxidation** processes, the MoS2 film formation on the surface is due to an electrophoretic deposition of colloidal MoS2 particles. Ion bombardment of such a film with **inert gas** ions at hundreds of keV sinters the **lubricating** film, which has a friction coefficient of ca. 0.04 in dry N or equivalent to sputtered films. As a 2nd approach to decreasing the surface friction of a Mo surface, 50-400 keV ion beams of S are implanted in Mo and characterized by Rutherford backscattering as well as tested with a reciprocal ball machine.
- L17 ANSWER 3 OF 20 TRIBO COPYRIGHT 2000 BAM  
 AN 244750 TRIBO  
 TI A study on the friction characteristics of RF sputtered MoS2/PTFE films.  
 AU Sang-Gi Lee; Kyung-Joon Lee; Young-Hwan Kim

SO J. Korean Inst. Met. Mater. (1994), Vol.32 (No. 9) p. 1135-1141  
 With 18 refs.  
 DT Journal  
 LA Korean  
 AB The RF sputtered MoS<sub>2</sub>/PTFE multilayer **lubricant** film has been studied to reduce the rapid ~~oxidation~~ tendency of sputtered MoS<sub>2</sub> film. The AES depth profile of MoS<sub>2</sub> film shows evenly distributed oxygen throughout the layer. However, by sputtering the PTFE as a top layer, the penetration of oxygen has been drastically suppressed. When the thickness of PTFE is about 500 Å, the friction coefficient of multilayer reduces from 0.34 to 0.15 in air. The optimum working pressure of ~~argon~~ and temperature of substrate are about 10m torr and 150 deg C, respectively, which show the largest grain size of MoS<sub>2</sub>.

L17 ANSWER 4 OF 20 TRIBO COPYRIGHT 2000 BAM  
 AN 240366 TRIBO  
 TI Environmental effects on the composition of surface films produced by an organo-molybdenum compound.  
 AU Yamamoto, Y.; Gondo, S.  
 SO Tribol. Trans. (1994), Vol.37 (No. 1) p. 182-188  
 With 24 refs.  
 CODEN: TRTRE4  
 DT Journal  
 LA English  
 AB The influence of environments on the properties of the surface films formed with molybdenum dithiocarbamate (MoDTC) was examined under a reciprocating sliding condition. MoS<sub>2</sub> was formed on the rubbing surfaces in air and oxygen, and molybdenum compounds with an **oxidation** state lower than MoS<sub>2</sub> were produced in nitrogen and **argon**. The surface film composed of MoS<sub>2</sub> was effective in reducing the friction and wear, while the molybdenum compound formed in nitrogen or **argon** had no ability to prevent direct contact between the rubbing surfaces and to reduce the friction. It was a necessary condition for forming the surface film composed of MoS<sub>2</sub> that the environment to be rubbed contained oxygen at a concentration above a certain level.

L17 ANSWER 5 OF 20 TRIBO COPYRIGHT 2000 BAM  
 AN 239980 TRIBO  
 TI Tribological performance of thin film amorphous carbon overcoats for magnetic recording rigid disks in various environments.  
 AU Bhushan, B.; Ruan, J.  
 SO Surface Coat. Technol. (1994), Vol.68/69 p. 644-650  
 With 13 refs.  
 CODEN: SCOTEC  
 SO Conference: 21. Int. Conf. 1994 Metallurgical Coatings and Thin Films, San Diego, Calif., United States, 25 Apr 1994 - 29 Apr 1994  
 Organizer: AVS  
 DT Journal; Conference  
 LA English  
 AB An ultrahigh vacuum tribotester equipped with Auger electron analyzer and mass spectrometer is used to study the friction and wear behavior of amorphous carbon coated magnetic thin film rigid disks against thin film sliders. The tests include continuous sliding of Al<sub>2</sub>O<sub>3</sub>-TiC sliders against **lubricated** and unlubricated polished and textured disks. Operating environment is found to play an important role in the tribological performance of the carbon overcoat. Wear lives were longest in dry nitrogen and **argon** environments as compared with ambient environment (with oxygen and water vapor), in agreement with some of the previously reported results. The wear lives of the carbon coatings in vacuum were inferior to those in other environments. In comparison,

surface roughness and **lubrication** play a less significant role in friction and wear for the disks tested. Based on this study, the authors conclude that poor wear life in vacuum results from intimate slider-to-disk contact. The long life in dry **Ar** and nitrogen as compared with **Ar**+O<sub>2</sub> and ambient environment, results from the absence of tribochemical **oxidation** prevalent in the **oxidizing** environment.

L17 ANSWER 6 OF 20 TRIBO COPYRIGHT 2000 BAM

AN 238280 TRIBO

TI High-temperature bearing operation in the absence of liquid **lubricants**.

AU Sorem, S.S.; Cattaneo, A.G.

SO Lubric. Engng. (1956), Vol.12 (No. 4) p. 258-260  
CODEN: LUENAG

DT Journal

LA English

AB Attempts are made to operate single-row, deep-groove, steel-cage ball bearings at 10,000 r.p.m. and 600 deg F with a radial load of about 30

lb

in the absence of any liquid **lubricant**. Examination of these bearings after short periods of operation indicates that the abrasive effect of metal oxides formed at elevated temperatures plays a major

role

in their destruction. The removal of oxygen from the environment of the bearing eliminates most of the abrasive wear and permits a substantial extension of bearing life. Experimentally, blanketing the running

bearing

with an **inert gas** effectively reduces oxide formation, but the most attractive solution to this problem appears to

be

the use of a reducing atmosphere of air and hydrocarbon vapor. The addition of sufficient jet-engine fuel (JP-4) to the bearing housing to maintain an air-fuel ratio in the range of 7 to 10 in the bearing surrounding atmosphere is used in much of the subsequent work. Having minimized the contribution of **oxidation** to the failure mechanisms encountered with dry-running bearings, scuffing, particularly between the rolling elements and their cage, appears as the next most destructive mechanism. For the prevention of scuffing, the application

of

conventional extreme-pressure films or boundary **lubrication** agents by the use of vapor phase additives or by bearing pretreatment is investigated. Bearings pretreated with sulphur have subsequently been operated with a reducing vapor blanket up to 60 h at 10,000 r.p.m. and 600 deg F without appreciable damage to the rolling and sliding

surfaces.

L17 ANSWER 7 OF 20 TRIBO COPYRIGHT 2000 BAM

AN 237282 TRIBO

TI Reactions between 52100 steel and tricresyl phosphate neat and mixed with

hydrocarbon **oil**.

AU Arezzo, F.; Moore, R.L.

SO Surface Coat. Technol. (1987), Vol.33 (No. 1/4) p. 235-242  
CODEN: SCOTEC

SO Conference: 14. Int. Conf. 1987 Metallurgical Coatings, San Diego, Calif., United States, 23 Mar 1987 - 27 Mar 1987  
Organizer: AVS; ASM; IUUSTA

DT Journal; Conference

LA English

AB Some of the results from a previous study which showed reactions between iron surfaces (52100 steel) and tricresyl phosphate (TCP) dissolved in hydrocarbon **oil** are discussed in this paper. This study had shown that microscale **oxidation** of the hydrocarbon **oil**

and preferential adsorption phenomena within the **oil** system components may result in a desirable phosphate type of coating. This phosphate is organic and it is converted into iron phosphate on **argon** ion sputtering. Also discussed in this paper are the results of a more recent work which shows the reactivity of neat TCP with

an identical 52100 steel surface. The results of electron spectroscopy for chemical analysis indicate that neat TCP behaves quite differently from TCP diluted in hydrocarbon **oil**. The phosphate generated on the metal surface by neat TCP yields predominantly a phosphide when subjected to **argon** ion sputtering.

L17 ANSWER 8 OF 20 TRIBO COPYRIGHT 2000 BAM  
 AN 235610 TRIBO  
 TI The effect of hydrogen on the rolling contact fatigue life of AISI 52100 and 440C steel balls.  
 AU Ciruna, J.A.; Szieleit, H.J.  
 SO Wear (1973), Vol.24 (No. 1) p. 107-118  
 With 17 refs.  
 CODEN: WEARAH  
 DT Journal  
 LA English  
 AB Rolling four-ball tests conducted on hydrogen impregnated AISI 52100 and 440C balls **lubricated** with mineral **oil** showed that fatigue life is inversely proportional to the hydrogen content in the steel. Longer fatigue lives were found for the treated 440C specimens as compared to the AISI 52100 test balls, and this was consistent with the lower hydrogen permeability that was observed within the 440C steel. Aging of the treated samples was found to have no appreciable effect on their fatigue lives. The same detrimental effect on fatigue life was also

observed when tests were conducted using H<sub>2</sub>S as a chemical source of hydrogen in the **lubricant**. In normal bearing operation, hydrogen is considered to come mainly from the reaction of water at the bearing surface and from the decomposition of the **lubricant**. In the former case, controlled atmosphere experiments showed that both oxygen and water were required to reduce the life of the test bearings. **Oxidation** studies showed that large quantities of hydrogen were generated during the **oxidative** decomposition of the **lubricant**.

L17 ANSWER 9 OF 20 TRIBO COPYRIGHT 2000 BAM  
 AN 231352 TRIBO  
 TI Detection of tribofragments of phosphorus compounds by AES and SIMS.  
 AU Mathieu, H.J.; Schumacher R.; Landolt, D.  
 SO Wear (1989), Vol.132 (No. 1) p. 99-110  
 With 14 refs.  
 CODEN: WEARAH  
 DT Journal  
 LA English  
 AB Tribofragmentation and thermal fragmentation of a phosphorus compound, used as a model compound for extreme pressure-antiwear (EP-AW) additives on steel surfaces, is investigated by Auger electron spectroscopy (AES), X-ray photoelectron spectroscopy (XPS) and secondary ion mass spectroscopy (SIMS). Reaction layers formed under typical EP-AW test conditions are investigated by simultaneous SIMS-AES in depth analysis using 5 keV **Ar+** ions. Elemental information (AES) as well as molecular information (SIMS) and state of **oxidation** (XPS) are obtained. P:O ratios of AES data and binding energy measurements confirm the presence of phosphates. In SIMS the same POn fragments are found after the wear test in the presence of the EP-AW additives and on samples

treated in phosphoric and di-isopropyldithiophosphoric acids. The concentration of such POn fragments is significantly higher inside a worn

crater (tribofragmentation) than outside (thermofragmentation only).

- L17 ANSWER 10 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 231079 TRIBO  
TI Environmental effects in fretting wear.  
AU Goto, H.  
SO Junkatsu (1988), Vol.33 (No. 3) p. 174-180  
With 52 refs.  
CODEN: JUNKAU  
DT Journal  
LA Japanese  
AB The effects of the oxygen and water vapor in various environments on the fretting wear of metals are mainly reviewed. The environment concerned includes air, vacuum, nitrogen **gas**, **inert gas**, **oil**, and water. The main conclusions are as follows: the environmental effects are predominant in the range of larger relative slip amplitudes. The oxygen causes the **oxidative** wear as well as the dispersion of wear debris from contact surfaces, to result in greater fretting wear in air than in vacuum and **inert gas**. Water vapor in air exerts a complicated effect on fretting. In dry air, the wear debris retained in the contact area reduces the extent of metal-to-metal contact. With an increase in the humidity, water vapor readily adsorbs on the freshly created metal surfaces and disturbs the adsorption of oxygen on them, which leads to an increase in adhesive wear. At high humidity levels, much water vapor is adsorbed on the surfaces and forms a water film with mild wear regime.
- L17 ANSWER 11 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 228559 TRIBO  
TI Standard test method for trace nitrogen in liquid petroleum hydrocarbons by syringe/inlet **oxidative** combustion and chemiluminescence detection.  
CS American Society for Testing and Materials (ASTM), Philadelphia, Pa., United States  
NR ASTM--D 4629-91  
SO Philadelphia, Pa., United States: ASTM 1991, 4 pp.  
DT Standard  
LA English  
AB This test method covers the determination of the trace total nitrogen naturally found in liquid hydrocarbons boiling in the range from approximately 50 deg C to 400 deg C, with viscosities between approximately 0.2 and 10 cSt (mm<sup>2</sup>/s) at room temperature. This test method is applicable to naphthas, distillates, and **oils** containing 0.3 to 100 mg/kg total nitrogen. The sample of liquid petroleum hydrocarbon is injected into a stream of **inert gas (helium or argon)**. The sample is vaporized and carried to a high temperature zone where oxygen is introduced and organic and bound nitrogen is converted to nitric oxide (NO). The NO contacts ozone and is converted to excited nitrogen oxide (NO<sub>2</sub>). The light emitted as the excited NO<sub>2</sub> decays is detected by a photomultiplier tube and the resulting signal is a measure of the nitrogen contained in the sample.
- L17 ANSWER 12 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 226331 TRIBO  
TI Separation of **oxidized** matter in used **lubricating oils** by paper chromatography.  
AU Morishita, S.  
SO Sekiyu Gakkaishi (1987), Vol.30 (No. 5) p. 307-311  
CODEN: SKGSAE  
DT Journal  
LA Japanese  
AB In the field testing of used **lubricating oils**,

**oxidized** matter was extracted by paper chromatography. When the paper with a drop of the **oil** was permeated with n-heptane two spots appeared. One was hydrocarbon and the other was **oxidized** matter. When the same paper was chromatographed using a C6H6-EtOH mixture

the **oxidized** matter was also separated. In these 2 procedures, the **oil** was separated into 3 spots: hydrocarbons, **oxidized** matter, and sludge on the paper. The **oil** was separated into saturated compounds (Sa), aromatic compounds (**Ar**), and resin (Re) by adsorption chromatography. It was observed that Sa and **Ar** formed a combined spot where the hydrocarbons were formed, and Re with polycyclic aromatic compounds gave a spot where the **oxidized** matter was formed. Thus, **oxidized** matter could be recognized by the size and depth of spot seen on the paper. For several samples of **oxidized oil**, this method indicated relation between the spot of **oxidized** matter and the Re content.

L17 ANSWER 13 OF 20 TRIBO COPYRIGHT 2000 BAM

AN 218799 TRIBO

TI **Lubrication** problems in sodium cooled fast breeder reactors.

AU Wild, E.; Mack, K.J.

SO EUROTRIB 81. ((Proceedings))//Vol. IV: Other tribological problems. Editor(s): Hebda, M.; Kajdas, C.; Hamilton, G.M. Warszawa, Poland: Wydawnictwa Komunikacji i Lacznosci (WKŁ) 1981, p. 390-400

ISBN: 83-206-0238-6

Notes: Also avail. from: Amsterdam, Elsevier Sci. Publ. Co.

SO Conference: 3. Int. Tribology Congr. 1981 (EUROTRIB '81), Warszawa, Poland, 21 Sep 1981 - 24 Sep 1981

Organizer: ITC

DT Book Article; Conference

LA English

AB In sodium cooled reactor facilities a number of frictional systems have to work properly over a long time, even under extreme conditions. These operating conditions are characterized by high temperatures; low viscosity of the liquid metal; slow relative movements, and high normal loads. To solve the associated tribological problems, a multitude of experiments have been carried out through the years. Wear resistant materials with low friction coefficients were found, being recommended

to the reactor construction departments. However, experience derived from these experiments called for specific investigations of frictional processes. Parameters (friction velocity, sodium temperature, movement, environment and corrosion) simultaneously influencing friction coefficients of material couples were analysed and separated. It could

be shown that some operating conditions positively influence the behavior

of friction systems. For instance: types of vibrational relative movement, surface oxydation or formation of wear particles were found to lower friction coefficients to a certain extent. Experiments were carried out with a number of material couples quote like-on-like quote . By way of example results are presented for the Co-base alloy Stellite 6 and the chromium carbide LC-1H. The influence of the parameters under investigation on the dynamic friction coefficient was measured in liquid sodium, representing the coolant of fast reactors, and partly in dry **argon** to prevent surface **oxidation** (for comparison).

L17 ANSWER 14 OF 20 TRIBO COPYRIGHT 2000 BAM

AN 215297 TRIBO

TI Decomposition of cumyl hydroperoxide with metal-containing dithiophosphates.

AU Kuteva, I.; Ivanov, S.



SO Izv. Khim. (1986), Vol.19 (No. 1) p. 78-88  
DT Journal  
LA English  
AB Co-, Ni-, Cu-, Mn-, Fe-, and Zn diisopropyl phosphorodithioates were evaluated for their **antioxidant** efficiencies by determining their ability to decompose cumyl hydroperoxide. The tests were carried out in decane at 313.15-383.15 K under **Ar** atmosphere.

L17 ANSWER 15 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 212146 TRIBO  
TI Thermogravimetric analysis of **lubricants**.  
AU Hsu, S.M.; Cummings, A.L.  
CS National Bureau of Standards (NBS), Washington, D.C., United States  
Society of Automotive Engineers (SAE), Warrendale, Pa., United States  
SO 1983, Rep., 10 pp.  
NR SAE-831682  
SO 1983, Tech. Pap.  
DT Report; Conference Article  
LA English  
AB A novel thermogravimetric analysis test method has been developed for the

evaluation of **lubricants**. It involves superimposing the thermogravimetric trace of the sample in **argon** over the trace produced in oxygen atmosphere. The difference of the two traces indicates

the **oxidative** influence on volatility as well as on the formation tendencies of high boiling (high molecular weight) **oxidation** products. The method was illustrated with a base **oil** with and without a catalyst package and an additive package. The test method is potentially useful for **lubricant** screening, quality control, and base **oil** composition effects on thermal **oxidative** stability.

L17 ANSWER 16 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 209725 TRIBO  
TI The delamination theory of wear and the wear of a composite surface.  
AU Jahanmir, S.; Suh, N.P.; Abrahamson, E.P.  
SO Wear (1975), Vol.32 (No. 1) p. 33-49  
CODEN: WEARAH  
DT Journal  
LA English  
AB The delamination theory of wear postulates that there is a quote non-workhardening quote soft surface layer which deforms continuously due to the instability of dislocations, and that the low speed sliding wear of metals is caused by the subsurface crack nucleation and propagation nearly parallel to the surface. A corollary of the theory is that when hard metal surfaces are plated with a soft metal to reduce the coefficient of friction and the wear rate, the soft metal layer must be thinner than a critical thickness so as to prevent the accumulation of dislocations in the plated layer and the formation of the delaminated layer. This corollary was investigated by plating annealed AISI 1018 steel with cadmium. The wear rate of the steel specimen plated with 0.1  $\mu$ m cadmium on both of the contacting surfaces was three orders of magnitude smaller than the unplated specimen when they were tested in **argon**. In the case of thicker coatings, the cadmium layer wears by the delamination process which occurs within the plated layer. The very thin cadmium plate is also effective in reducing wear in inert **oil**, but not effective in an **oxidizing** atmosphere. The coefficient of friction of the 0.1  $\mu$ m Cd plated steel was less than the unplated steel under all test conditions.

L17 ANSWER 17 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 208217 TRIBO

TI Tribology of selected ceramics at temperatures to 900 deg C.  
AU Sliney, H.E.; Jacobson, T.P.; Deadmore, D.; Miyoshi, K.  
SO Proceedings of the 10th Annual Conference on Composites and Advanced Ceramic Materials.  
Editor(s): Messier, D.R.  
Columbus, Ohio, United States: American Ceramic Society 1986, p. 1039-1051  
Ser. Title: Ceram. Engng. Sci. Proc., Vol. 7, No. 7/8  
SO Conference: 10. Annu. Conf. 1986 Composites and Advanced Ceramic Materials, Cocoa Beach, Fla., United States, 19 Jan 1986 - 24 Jan 1986  
Organizer: Amer. Ceram. Soc.  
DT Book Article; Conference  
LA English  
AB The authors determined the friction and wear of selected ceramics sliding on a precipitation-hardened nickel-base super alloy at room temperature and at 800 deg C in order to study the possible **lubricating** effects of metal **oxidation** on the tribological properties of ceramic/metal sliding combinations. A more detailed parametric study was then performed on the effects of temperature and sliding velocity on friction and surface characteristics to 900 deg C. Plasma-sprayed zirconia was modified by the addition of calcium fluoride in an attempt to improve its tribological properties. Finally, a composite, plasma-sprayed coating composition was formulated consisting of metal-bonded chromium carbide for wear resistance, and solid **lubricant** additives. The solid **lubricant** additives were metallic silver and a eutectic of barium fluoride and calcium fluoride. The friction and wear characteristics of this composite coating were evaluated from 25 to 760 deg C in atmospheres of air, **helium**, and hydrogen. The objective of the experiments in **helium** and hydrogen was to identify a candidate piston-ring and cylinder-liner material combination with acceptable friction and wear properties for use in the hot areas of the Stirling engine cylinders.

L17 ANSWER 18 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 199262 TRIBO  
TI quote Surtec 85 quote : new and further developments in surface technology.  
AU Enke, C.G.  
SO Schweiz. Masch.-Markt (1986), Vol.86 (No. 2) p. 48-51  
CODEN: SWMCAC  
SO Conference: 3. Int. Kongr. 1985 Oberflaechentechnik (SURTEC '85), Berlin, Germany, 7 Oct 1985 - 9 Oct 1985  
Organizer: VDI; AMK  
DT Journal; Conference  
LA German  
AB Vacuum plasma spraying, the latest development of atmospheric plasma spraying and shrouded plasma spraying is discussed. It is performed in a low pressure **inert gas** atmosphere. The spraying chamber is evacuated and back-filled with 100 mbar of pure **Ar** which is maintained during spraying. The advantages are reduced porosity and better adherence due to higher particle speed, higher purity, and reduced **oxidation**, ease of prewarming the substrate, capability of cleaning the substrate by sputtering, and ability to use reactive metal powders such as Ta. The wear properties vs. steel X155CrVMo121H and Al2O3 of galvanically or chemically deposited wear protective layers of Cr, Ni-P, Ni-Si-C and Ni-P-diamond, thermochemically produced epsilon-FexN, Fe2B(FeB), Cr7C3, VC, chemical vapor deposited TiC, TiC/Ti(C,N)/TiN, TiN, CrN, and plasma sprayed Mo, Cr2O3, Al2O3, WC-Co are compared. Sputter-ion plating is used for the production of wear- and

corrosion-resistant and decorative coatings. Both ion-plating and sputtering are performed at pressures of 0.005-0.05 mbar. At such pressures the mean free path is several mm, making it possible to coat corners and edges of objects. The ion-plating process consists of the steps of pre-cleaning, ion etching, coating, cooling, and conditioning. Physical vapor deposited MoS<sub>2</sub> is used as a **lubricant** under conditions where application of **oil** or **grease** is prohibited.

L17 ANSWER 19 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 195818 TRIBO  
TI Friction and wear studies of graphite and a carbon-carbon composite ((against themselves)) in air and in **helium**.  
AU Li, C.C.; Sheehan, J.E.  
SO Wear of materials 1981. ((Proceedings)).  
Editor(s): Rhee, S.K.; Ruff, A.W.; Ludema, K.C.  
New York, N.Y., United States: American Society of Mechanical Engineers (ASME) 1981, p. 525-533  
With 12 refs.  
Ser. Title: ASME-H-177  
SO Conference: 3. Int. Conf. 1981 Wear of Materials, San Francisco, Calif., United States, 30 Mar 1981 - 1 Apr 1981  
Organizer: ASME; JSLE; ASTM; AIME; ASM; SPE; Amer. Ceram. Soc.  
DT Book Article; Conference  
LA English  
AB Sliding friction and wear tests were conducted on a commercial isotropic graphite and a carbon-carbon composite in air, purified **helium**, and a **helium** environment containing controlled amounts of impurities simulating the primary coolant chemistry of a high-temperature gas-cooled reactor (HTGR). The friction and wear characteristics of the materials investigated were stable and were found to be very sensitive to the testing temperature. In general, friction and wear decreased with increasing temperature in the range from ambient to 950 deg C. This temperature dependence is concluded to be due to chemisorption of impurities to form **lubricating** films and **oxidation** at higher temperatures, which reduce friction and wear. Wear under **lubricating** conditions is believed to occur through breaking of the carbon interlayer bonds, resulting in layer type of debris, while under nonlubricating conditions the wear observed was abrasive. Graphite and carbon-carbon composites are concluded to be favorable candidate materials for high-temperature sliding service in **helium**-cooled reactors.

L17 ANSWER 20 OF 20 TRIBO COPYRIGHT 2000 BAM  
AN 184925 TRIBO  
TI ((Effect of atmosphere on)) Friction and wear of the sintered Al-Cu alloy ((**inert gas**, **oxidizing gas**; addition of solid **lubricant**)).  
AU Suda, M.; Harada, M.; Tsukazaki, J.  
SO Seimitsu Kikai (1981), Vol.47 (No. 5) p. 535-540  
CODEN: SEKIAU  
DT Journal  
LA Japanese

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File 344:Chinese Patents ABS Apr 1985-2000/Jan

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File 347:JAPIO Oct 1976-1999/Oct(UPDATED 000208)

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File 351:DERWENT WPI 1963-2000/UD=, UM=, & UP=200013

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File 371:French Patents 1961-2000/BOPI 0011

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Set	Items	Description
S1	188814	HE OR HELIUM OR AR OR ARGON OR KRYPTON OR KR OR XENON OR XE OR RADON OR RD
S2	67067	(INERT OR NOBLE) (2N) (GAS OR GASES)
S3	270114	OXIDAT? OR OXIDI? OR ANTIOXID?
S4	1879994	MACHIN?
S5	494593	LUBRICAT? OR OIL OR GREASE
S6	35	(S1 OR S2) AND S3 AND S4 AND S5
S7	34	S6 NOT AD>981013

7/7/1 (Item 1 from file: 347)

DIALOG(R)File 347:JAPIO

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05221867 \*\*Image available\*\*  
EXCAVATION TOOL AND MANUFACTURE THEREOF

PUB. NO.: 08-177367 [JP 8177367 A]

PUBLISHED: July 09, 1996 (19960709)

INVENTOR(s): NISHIUCHI KAZUAKI

APPLICANT(s): SUMITOMO ELECTRIC IND LTD [000213] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 06-324711 [JP 94324711]

FILED: December 27, 1994 (19941227)

#### ABSTRACT

PURPOSE: To substantially extend the service life of a base metal against abrasion.

CONSTITUTION: A base metal 1 made of high speed steel, tool steel or die steel, and an excavation cutter 3 of cemented carbide alloy are heated in one of vacuum, non-**\*\*oxidizing\*\***, inert and reducing atmosphere, or in a salt bath at a temperature equal to 850 deg.C or higher, and a brazing material having a high fusion point and existing between the metal 1 and the cutter 3 is melted by the application of heat at the hardening process. Thereafter, the metal 1 and the cutter 3 are immersed in **\*\*oil\*\*** or water for cooling, or subjected to a cooling process by use of one or more types of gases selected among non-**\*\*oxidizing\*\*** **\*\*gas\*\***, **\*\*inert\*\*** **\*\*gas\*\***, reducing **\*\*gas\*\*** and fine carburization gas. Thus, hardening and brazing processes can be simultaneously completed, and a re-heating process is not required, thereby eliminating a drop in the hardness of the base plate 1 otherwise resulting from the process. At the same time, hardness equivalent to or above the case of the conventional hardening weld overlay can be added to the whole of the base metal 1. According to this construction, the base metal 1 in a pure state can withstand an excavation process over a long time.

7/7/2 (Item 2 from file: 347)

DIALOG(R)File 347:JAPIO

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05209985 \*\*Image available\*\*

\*\*\*LUBRICATING\*\* \*\*OIL\*\* COMPOSITION FOR INTERNAL COMBUSTION ENGINE

PUB. NO.: 08-165485 [JP 8165485 A]  
 PUBLISHED: June 25, 1996 (19960625)  
 INVENTOR(s): GOTO MASAHIKA  
 NAKAMURA HIDEYUKI  
 APPLICANT(s): IDEMITSU KOSAN CO LTD [330172] (A Japanese Company or  
 Corporation), JP (Japan)  
 APPL. NO.: 06-311012 [JP 94311012]  
 FILED: December 14, 1994 (19941214)

ABSTRACT

PURPOSE: To obtain a \*\*lubricating\*\* \*\*oil\*\* composition for internal combustion engine improving an \*\*oxidative\*\* deterioration life, capable of reducing of maintenance according to prolongation of \*\*oil\*\* charge interval and suitable as an engine \*\*oil\*\* for a co-generation system, etc., by mixing a base \*\*oil\*\* of a \*\*lubricating\*\* \*\*oil\*\* with a specific \*\*antioxidant\*\* and a specific ester.

CONSTITUTION: The objective composition is composed of a base \*\*oil\*\* of a \*\*lubricating\*\* \*\*oil\*\*, (A) a hindered phenolic-based \*\*antioxidant\*\*, or an amine-based \*\*antioxidant\*\* such as a dialkyldiphenylamine-based or a naphthylamine-based and (B) an ester derived from a substituted hydroxyaromatic carboxylic acid such as a compound expressed by the formula (\*\*Ar\*\* is a multifunctional aromatic nucleus; R is an organic group; (m) and (p) are each 1-3; (n) is 1-4) and a hydroxy compound such as an alkyl-substituted aromatic alcohol. Preferably, the objective composition contains a phosphoric acid ester-based \*\*antioxidant\*\* as an \*\*antioxidant\*\* together with the component A, and mixing amounts of the component A and B to whole amount of the composition are respectively 0.2-10wt.% and 0.1-20wt.%.

7/7/3 (Item 3 from file: 347)

DIALOG(R) File 347:JAPIO  
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05209982 \*\*Image available\*\*  
 \*\*\*LUBRICATING\*\* \*\*OIL\*\* COMPOSITION FOR GEAR

PUB. NO.: 08-165482 [JP 8165482 A]  
 PUBLISHED: June 25, 1996 (19960625)  
 INVENTOR(s): GOTO MASAHIKA  
 IGARASHI HIDEO  
 APPLICANT(s): IDEMITSU KOSAN CO LTD [330172] (A Japanese Company or  
 Corporation), JP (Japan)  
 APPL. NO.: 06-308584 [JP 94308584]  
 FILED: December 13, 1994 (19941213)

ABSTRACT

PURPOSE: To obtain a \*\*lubricating\*\* \*\*oil\*\* composition for gear having excellent wear-resistance and \*\*oxidation\*\* stability, and lowering a friction factor ratio (low speed/high speed) and useful for a car gear, etc., by mixing a base \*\*oil\*\* of a \*\*lubricating\*\* \*\*oil\*\* with an extreme-pressure agent or wear resistant agent and a specific ester.

CONSTITUTION: A base \*\*oil\*\* of a \*\*lubricating\*\* \*\*oil\*\* is mixed with (A) an extreme-pressure agent or a wear resistant agent, e.g. a sulfur-based, a phosphorus-based, a chlorine-based, an ester-based, an organic acid-based or an organic metal-based compound, and (B) an ester derived from a substituted hydroxy aromatic carboxylic acid such as a compound expressed by the formula (\*\*Ar\*\* is a multifunctional aromatic nucleus; R is an organic group; (m) and (p) are each 1-3; (n) is 1-4) and a hydroxy compound

such as an alkyl-substituted aromatic alcohol, and e.g. respective mixing amount of the component A and B to the whole amount of the composition is 0.1-20wt.% and 0.01-20wt.% to obtain the objective composition.

**7/7/4 (Item 4 from file: 347)**

DIALOG(R) File 347:JAPIO

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05202357 \*\*Image available\*\*  
HEAT-TREATING \*\*OIL\*\* COMPOSITION

PUB. NO.: 08-157857 [JP 8157857 A]

PUBLISHED: June 18, 1996 (19960618)

INVENTOR(s): UCHIDA HITOSHI

GOTO MASAHISA

OKADA TAHEI

NAKAMURA HIDEKAZU

APPLICANT(s): IDEMITSU KOSAN CO LTD [330172] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 06-306642 [JP 94306642]

FILED: December 09, 1994 (19941209)

**ABSTRACT**

PURPOSE: To obtain the subject composition having excellent heatresistance under a thermal load applied by a heat-treated hot metal, giving excellent luster to a heat-treated metal and useful for a bearing race, etc., by compounding a base \*\*oil\*\* with a substituted hydroxyaromatic carboxylic acid ester derivative.

CONSTITUTION: This composition is produced by compounding (A) a base \*\*oil\*\* with (B) 0.1-90 wt.% (based on the total composition) of a substituted hydroxyaromatic carboxylic acid ester derivative, preferably a boron-containing substituted hydroxyaromatic carboxylic acid ester derivative (e.g. an ester derivative derived from a substituted hydroxyaromatic carboxylic acid of the formula (\*\*Ar\*\* (sub 1) is a polyvalent aromatic nucleus; R(sup 1) is an organic group; (p) and (m) are each 1-3; (n) is 1-4) and a hydroxy compound). The composition is preferably further compounded with (C) 0.1-50wt.% of a cooling performance improving agent, preferably an ethylene-.alpha.-olefin copolymer and/or a polyolefin, (D) 0.1-50wt.% of a deteriorated acid neutralizing agent and (E) 0.1-10wt.% of an \*\*antioxidant\*\*.

**7/7/5 (Item 5 from file: 347)**

DIALOG(R) File 347:JAPIO

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05196066  
PACKING AND ITS PRODUCTION

PUB. NO.: 08-151566 [JP 8151566 A]

PUBLISHED: June 11, 1996 (19960611)

INVENTOR(s): IIZUKA TOSHI

KONDO HISAAKI

TAKAHASHI MIYOSHI

KASUYA TOSHIHIRO

APPLICANT(s): GUN EI CHEM IND CO LTD [367680] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 06-315849 [JP 94315849]

FILED: November 25, 1994 (19941125)

**ABSTRACT**

PURPOSE: To provide a packing excellent in hermetic sealability without

causing the deformation (loosening or unraveling) of both ends of a cut ground packing and requiring various devices or labors in installation into a stuffing box.

CONSTITUTION: This packing is obtained by heating and flameproofing fibers which are precursors for carbon fibers at  $\leq 300$  deg.C temperature in an **\*\*oxidizing\*\*** atmosphere, then carbonizing the resultant fibers in the temperature region of 300-700 deg.C in a vacuum or an **\*\*inert\*\*** **\*\*gas\*\*** atmosphere, providing a carbon fiber spun yarn or a carbon fiber filament yarn, then impregnating the prepared spun yarn or filament yarn with fine carbon powder such as graphite, subsequently tightly bundling the impregnated yarn, forming a packing structure, further baking the resultant structure at 800-3000 deg.C in a vacuum or an **\*\*inert\*\*** **\*\*gas\*\*** atmosphere and further dispersing and blending a mixture of fine carbon powder such as graphite with a mineral **\*\*oil\*\*** and a siloxane polymer in the baked packing structure.

7/7/6 (Item 6 from file: 347)

DIALOG(R)File 347:JAPIO

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05188386

ELECTROVISCUS FLUID

PUB. NO.: 08-143886 [JP 8143886 A]

PUBLISHED: June 04, 1996 (19960604)

INVENTOR(s): MIYANO MARI  
SAKURAI MAKOTO  
SHII HAWAADO  
SAITO TASUKU

APPLICANT(s): BRIDGESTONE CORP [000527] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 06-291026 [JP 94291026]

FILED: November 25, 1994 (19941125)

#### ABSTRACT

PURPOSE: To obtain the subject fluid consisting of a specific carbonaceous powder and silicone **\*\*oil\*\***, excellent in electroviscus characteristics in wide temperature area, having low initial viscosity, free from settling of disperse phase, excellent in re-dispersibility, long-term dispersibility, long-term stability and responsiveness in application of electric field and requiring a small consumed power.

CONSTITUTION: This fluid comprises (A) 1-60wt.% of carbonaceous powder having dielectric (e.g. carbonaceous powder having 0.01-100. $\mu$ m average particle diameter and obtained by carrying out thermal polymerization of a condensed polycyclic aromatic compound consisting essentially of naphthalene as a main component in the presence of HF/BF(sub 3) catalyst, carrying out heat treatment of the resultant 100% mesophase pitch having 150-400 deg.C softening point at a temperature of 50-400 deg.C not higher than its melting point in an **\*\*oxidizing\*\*** atmosphere so as to give 5-25wt.% oxygen content in the pitch, then carrying out heat treatment of the pitch at 300-700 deg.C in an **\*\*inert\*\*** **\*\*gas\*\*** atmosphere to carbonize the pitch so as to give 3-20wt.% oxygen content in the pitch) and (B) a modified silicone **\*\*oil\*\*** (e.g. a polyether-modified, epoxy-modified, methacrylic acid-modified or carbinol-modified silicone **\*\*oil\*\***) contained in an amount of 0.1-20% based on the component A and having 0.65-1000cSt viscosity at 25 deg.C.

7/7/7 (Item 7 from file: 347)

DIALOG(R)File 347:JAPIO

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04338042    \*\*Image available\*\*  
FOAM-LIKE \*\*MACHINING\*\* LIQUID

PUB. NO.:        05-329742 [JP 5329742 A]  
PUBLISHED:      December 14, 1993 (19931214)  
INVENTOR(s):    MORI KATSUHIRO  
                 HAGA MINORU  
                 KANEKO SHINOBU  
APPLICANT(s):   TOYOTA MOTOR CORP [000320] (A Japanese Company or  
                 Corporation), JP (Japan)  
APPL. NO.:      04-162157 [JP 92162157]  
FILED:          May 28, 1992 (19920528)

#### ABSTRACT

PURPOSE: To provide \*\*machining\*\* liquid which reduces a use amount and suppresses the occurrence of chemical reaction between a \*\*machining\*\* tool and a work.

CONSTITUTION: A substance prepared by eliminating defoaming agent from a water soluble coolant being a kind of \*\*machining\*\* liquid is foamed by means of \*\*argon\*\* gas 31 being a kind of inactive gas to produce a foam-like coolant 50. By feeding the foam-like coolant 50 to the peripheries of the portions to be \*\*machined\*\* of a work 58 and a throw-away chip 60, a part the temperature of which is increased owing to a cutting heat is covered with \*\*argon\*\* gas. The occurrence of chemical reaction, such as \*\*oxidation\*\*, is thereby suppressed, the service life of the service life of the throw-away chip 60 is increased, and \*\*machined\*\* quality of the work is improved. Further, since the foam-like coolant 50 is adhered to the work 58 and apt to reside, purposes of \*\*lubrication\*\* and cooling are achieved by means of a small amount of coolant 12.

7/7/8        (Item 8 from file: 347)

DIALOG(R)File 347:JAPIO

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04009110

CARBONACEOUS POWDER FOR ELECTROVISCIOUS LIQUID DISPERSE PHASE AND ELECTROVISCIOUS LIQUID

PUB. NO.:        05-000810 [JP 5000810 A]  
PUBLISHED:      January 08, 1993 (19930108)  
INVENTOR(s):    FUKUYAMA YOSHIKI  
                 KURACHI IKUO  
                 MARUYAMA TAKAYUKI  
                 ISHINO YUICHI  
                 SAITO TASUKU  
APPLICANT(s):   BRIDGESTONE CORP [000527] (A Japanese Company or Corporation)  
                 , JP (Japan)  
APPL. NO.:      03-250315 [JP 91250315]  
FILED:          September 04, 1991 (19910904)

#### ABSTRACT

PURPOSE: To provide carbonaceous powder which is used as the disperse phase of an electroviscous liquid whose power consumption is small and whose \*\*oxidizing\*\* resistance is increased and to provide the electroviscous liquid where the carbonaceous powder is used as its disperse phase.

CONSTITUTION: After pitch powder is heat treated below its melting point and at temperature of  $\geq 50$  deg.C and  $\leq 400$  deg.C in an \*\*oxidizing\*\* atmosphere to make the oxygen content be 3 to 25wt.%, it is heat-treated at



temperature of  $\geq 300$  deg.C and  $\leq 700$  deg.C under an **\*\*inert\*\*** **\*\*gas\*\*** atmosphere to carbonize it and simultaneously to make the oxygen content be 3 to 10wt.%. Its particle size is adjusted to 0.01 to 100 micron average particle diameter at need. The electroviscous liquid of this invention is characterized by constituting of a disperse phase consisting of 1 to 60wt.% of the carbonaceous powder and a liquid phase consisting of 40 to 99wt.% of electrical insulating **\*\*oil\*\*** whose viscosity is 0.65 to 1000 centistokes (cSt) at room temperature

7/7/9 (Item 9 from file: 347)

DIALOG(R)File 347:JAPIO

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03949690

FAT COMPOSITION FOR FOOD **\*\*MACHINE\*\***

PUB. NO.: 04-314790 [JP 4314790 A]

PUBLISHED: November 05, 1992 (19921105)

INVENTOR(s): OGAKE RYOJI  
OKADA MITSUO  
TAKASHIMA HIROYUKI  
SHIMIZU TERUO  
YAMAMOTO NARIHITO

APPLICANT(s): NIPPON OIL CO LTD [000444] (A Japanese Company or Corporation), JP (Japan)  
NIPPON OIL & FATS CO LTD [000434] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 03-108369 [JP 91108369]

FILED: April 12, 1991 (19910412)

#### ABSTRACT

PURPOSE: To obtain the title composition having a suitable cloud point and improved safety in food sanitation, **\*\*oxidation\*\*** resistance, etc., by transesterifying a mediumchain saturated fatty acid triglyceride with coconut **\*\*oil\*\*** and/or palm kernel **\*\*oil\*\*** each of which has a specified unsaturated fatty acid content.

CONSTITUTION: A mixture of 40-90wt.% medium-chain saturated fatty acid triglyceride desirably having 6-10 carbon atoms with 60-10wt.% coconut **\*\*oil\*\*** and/or palm kernel **\*\*oil\*\*** each of which has an unsaturated fatty acid content of 8wt.% or below is reacted at 80-100 deg.C for 30min to 2hr in the presence of a 0.05-1wt.%, based on the mixture, catalyst (e.g. sodium methylate) in an **\*\*inert\*\*** **\*\*gas\*\*** atmosphere, and the obtained product is decolored and deodorized to obtain the title composition having a cloud point of 5 deg.C or below and an AOM of 300hr or above.

7/7/10 (Item 10 from file: 347)

DIALOG(R)File 347:JAPIO

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03536048 **\*\*Image available\*\***

COVER FOR MOLTEN METAL SUPPLYING HOLE IN HORIZONTAL TYPE CONTINUOUSLY CASTING FURNACE FOR 'STELLITE(R)'

PUB. NO.: 03-198948 [JP 3198948 A]

PUBLISHED: August 30, 1991 (19910830)

INVENTOR(s): SUZUKI MICHINORI  
KURIHARA KEN  
ABO KATSUMI

APPLICANT(s): MITSUBISHI MATERIALS CORP [000626] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 01-339936 [JP 89339936]  
 FILED: December 27, 1989 (19891227)

# ABSTRACT

PURPOSE: To prevent **\*\*oxidation\*\*** of 'Stellite(R)' by providing a cover body for covering an **\*\*oil\*\*** supplying hole, a hanging-down **\*\*machine\*\*** for hanging down the cover body, an **\*\*Ar\*\*** gas supplying hole for discharging **\*\*Ar\*\*** gas below the cover body and a cooling air discharging pipe for discharging the air to outer surface of the cover body.

CONSTITUTION: The cover body 20 is hung down to cover a molten metal supplying hole 3 in a furnace body 1. The hanging-down **\*\*machine\*\*** 11 is shifted to the prescribed waiting position. The **\*\*Ar\*\*** gas is supplied into the **\*\*Ar\*\*** gas supplying hole 27 and also the cooling air is supplied into the cooling air discharging pipe 30. The **\*\*Ar\*\*** gas discharged in inner part of the cover body 10 prevents the **\*\*oxidation\*\*** of molten metal S of 'Stellite(R)' in the furnace and the cooling air discharged to the outer surface of cover body 10 forcibly cools the cover body 10. Under such condition, by operating the horizontal type continuously casting furnace, the 'Stellite(R)' bar is continuously cast. By this method, the molten metal of 'Stellite(R)' in the furnace is prevented from **\*\*oxidation\*\*** and clogging of a cooling die caused by **\*\*oxidation\*\*** of 'Stellite(R)' can be previously obviated.

7/7/11 (Item 11 from file: 347)

DIALOG(R)File 347:JAPIO

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03106804 **\*\*Image available\*\***  
 THERMOSTATIC **\*\*OIL\*\*** TANK

PUB. NO.: 02-082304 [JP 2082304 A]

PUBLISHED: March 22, 1990 (19900322)

INVENTOR(s): FUJIYAMA YUKINOBU  
 YANAGIDA YOSHIO

APPLICANT(s): HORIBA LTD [323778] (A Japanese Company or Corporation), JP  
 (Japan)

APPL. NO.: 63-235262 [JP 88235262]

FILED: September 20, 1988 (19880920)

# ABSTRACT

PURPOSE: To prevent **\*\*oxidation\*\*** of stored **\*\*oil\*\*** due to oxygen in air by constituting an inner cover into a vertically movable floating cover, always purging the space above this cover with **\*\*inert\*\*** **\*\*gas\*\***.

CONSTITUTION: An inner cover V is provided in a tank S so that it is brought into contact with the whole of the surface of a stored **\*\*oil\*\*** O, and at least a part of the inner cover N is constituted into a floating cover N2 which can be vertically moved in accordance with displacement of the surface of stored **\*\*oil\*\***. The space above the inner cover N is always purged with **\*\*inert\*\*** **\*\*gas\*\*** G. Thus, the area of evaporation of stored **\*\*oil\*\*** O is almost all eliminated to suppress the amount of evaporation as much as possible, and degradation and a gelling phenomenon of stored **\*\*oil\*\*** O due to **\*\*oxidation\*\*** are difficult to occur, and the life of stored **\*\*oil\*\*** O and the uniform temperature control of high precision are secured for a long time.

7/7/12 (Item 12 from file: 347)

DIALOG(R)File 347:JAPIO

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02626429

INDUSTRIAL PRODUCTION OF KNIT AND FABRIC MADE OF HIGH-TENACITY AND HIGH-MODULUS CARBON FIBER

PUB. NO.: 63-243329 [JP 63243329 A]  
 PUBLISHED: October 11, 1988 (19881011)  
 INVENTOR(s): WATABE SHOZO  
 APPLICANT(s): WATABE SHOZO [000000] (An Individual), JP (Japan)  
 APPL. NO.: 62-071712 [JP 8771712]  
 FILED: March 27, 1987 (19870327)

ABSTRACT

PURPOSE: To obtain the titled knit and fabric by graphitizing a knit and fabric made of yarns produced by melt spinning a 100% mesophase pitch from petroleum pitch formed as a by-product through thermal catalyst cracking of desulfurized reduced-pressure light **oil**, followed by making infusible and calcination.

CONSTITUTION: First, a petroleum pitch (with initial and final boiling points of 460 deg.C and 560 deg.C, respectively) formed as a by-product through thermal catalytic cracking of desulfurized reduced-pressure light **oil** is subjected to blowing of a non-**oxidative** gas to carry out a heating treatment at 380-420 deg.C while stirring. Furthermore, in a non-**oxidative** gas flow, only the mesophase in the pitch is fused at 300-350 deg.C to effect enlargement followed by separation of the 100% mesophase pitch from the non-mesophase one taking advantage of the difference between their specific gravities followed by purification. This 100% mesophase pitch is brought to melt spinning followed by making infusible in air at 300-340 deg.C and then calcination at 550-1,000 deg.C in an **inert** **gas** to produce yarns, which are made into bundles each of which consists of 1,000-10,000 yarns. These bundles are knitted and woven using appropriate **machines** to form knit and fabric, which are graphitized at 2,000-2,700 deg.C in an **inert** **gas**.

7/7/13 (Item 13 from file: 347)

DIALOG(R)File 347:JAPIO

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02325096

**LUBRICATING OIL COMPOSITION FOR GEAR**

PUB. NO.: 62-241996 [JP 62241996 A]  
 PUBLISHED: October 22, 1987 (19871022)  
 INVENTOR(s): SUZUKI KUNIAKI  
 APPLICANT(s): TOA NENRYO KOGYO KK [352374] (A Japanese Company or Corporation), JP (Japan)  
 APPL. NO.: 61-085560 [JP 8685560]  
 FILED: April 14, 1986 (19860414)

ABSTRACT

PURPOSE: To provide the title composition having excellent wear resistance, (high- temperature) **oxidation stability**, and (low-temperature) flowability at low cost, which comprises a particular polyoxyalkylene glycol ester as a base **oil**.

CONSTITUTION: One mol of polyglycol (a) which is a ring-opening (co)polymer of at least one 2-4C alkylene oxide is reacted with 1.1-1.5mol of 1-10C straight-chain, branched or cyclic carboxylic acid (b) in the presence of a catalyst (e.g., phosphoric acid) in an atmosphere comprising an **inert** **gas**, such as nitrogen, to obtain a polyoxyalkylene glycol ester (A) having a viscosity of 5-40mm(sup 2)/sec (100 deg.C). Component A is used as a base **oil** and, if necessary, blended with 0.3-5% (by weight; the same shall apply hereinafter) **antioxidant** such as aromatic amine, 0.3-13%

extreme-pressure additive such as tricresyl phosphate, 0.01-3% metallic inert material, 0.05-2% anticorrosive, 0.01-3% oiliness improver, 0.0005-0.02% antifoamer, and 10-50% other ester such as diisodecyl adipate.

7/7/14 (Item 14 from file: 347)

DIALOG(R)File 347:JAPIO

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02278741 \*\*Image available\*\*

PHOTOSENSITIVE MATERIAL

PUB. NO.: 62-195641 [JP 62195641 A]

PUBLISHED: August 28, 1987 (19870828)

INVENTOR(s): SATO KOZO

YAMAMOTO SOICHIRO

APPLICANT(s): FUJII PHOTO FILM CO LTD [000520] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 61-038512 [JP 8638512]

FILED: February 24, 1986 (19860224)

#### ABSTRACT

PURPOSE: To improve the S/N of a photosensitive material and to obtain distinct picture image by forming a photosensitive layer containing silver halide, a reducing agent, a polymerizable compound, and a specified azo compound on a base body, thus forming a photosensitive material for heat development.

CONSTITUTION: An azo compound expressed by the formula is used wherein **\*\*Ar\*\*** is an aryl group, or a heterocyclic group; Cp is a group having the function to be bonded to an **\*\*oxidized\*\*** body of the reducing agent such as active methylene compounds, phenolic compounds, condensed pyrazole compounds, etc. Trimethylolpropane triacrylate, etc., is used as the polymerizable compound, which is dispersed in a photosensitive layer in the form of microcapsules of **\*\*oil\*\*** drops, wherein silver halide, a reducing agent, a color picture image forming material, etc., are contained in the **\*\*oil\*\*** drops to obtain thus a photosensitive material. Since an azo compound is used, the S/N is improved and satisfactory positive-picture image is obtained

7/7/15 (Item 15 from file: 347)

DIALOG(R)File 347:JAPIO

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02198192

METAL WORKING **\*\*OIL\*\***

PUB. NO.: 62-115092 [JP 62115092 A]

PUBLISHED: May 26, 1987 (19870526)

INVENTOR(s): OKITA TSUGIO

NAKAJIMA AKIO

TAKAI MAKOTO

HASHIGUCHI YUKIO

MIYAKOSHI SEIJIRO

OGIWARA SHOJI

APPLICANT(s): MIYOSHI OIL & FAT CO LTD [366554] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 60-255624 [JP 85255624]

FILED: November 14, 1985 (19851114)

#### ABSTRACT

PURPOSE: To provide a metal working **\*\*oil\*\*** which is excellent in

lubricity, can provide a worked article having an excellent finished surface even in the use in a small amount, is excellent in stability with time, storage stability, and marketability, and is free from the occurrence of odor and which comprises a polymerized \*\*oil\*\* having a particular range of viscosity and obtained by polymerizing a hydrogenated fish \*\*oil\*\*.

CONSTITUTION: Sardine \*\*oil\*\*, herring \*\*oil\*\*, or the like is deacidified with an aqueous NaOH solution, washed with water, and decolorized with an activated clay or the like, thereby obtaining a refined fish \*\*oil\*\*. The refined fish \*\*oil\*\* is hydrogenated in the presence of a Ni-based catalyst under a hydrogen pressure of 1.0-4.0kg/cm<sup>2</sup> at 160-200 deg.C to obtain a hydrogenated fish \*\*oil\*\* having an iodine value of 60-110. The hydrogenated fish \*\*oil\*\* is polymerized by either a method which comprises heating the hydrogenated fish \*\*oil\*\* at 280-320 deg.C in an \*\*inert\*\* \*\*gas\*\* atmosphere such as N<sub>2</sub> or CO<sub>2</sub> and stirring it for 2-30hr, or a method which comprises heating the hydrogenated fish \*\*oil\*\* at 120-200 deg.C and \*\*oxidizing\*\* it while feeding O<sub>2</sub> or air for 2-30hr, thereby obtaining a polymerized \*\*oil\*\* having a viscosity of 80-3,000cp. The polymerized \*\*oil\*\* may be used as such or after blending with an additive, an oiliness improver, etc., as a metal working \*\*oil\*\*.

7/7/16 (Item 16 from file: 347)

DIALOG(R)File 347:JAPIO

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02151994 \*\*Image available\*\*

SYNTHETIC \*\*LUBRICATING\*\* \*\*OIL\*\* COMPOSITION

PUB. NO.: 62-068894 [JP 62068894 A]

PUBLISHED: March 28, 1987 (19870328)

INVENTOR(s): TSUBOI AKIRA  
OYOSHI HAJIME

APPLICANT(s): MITSUI PETROCHEM IND LTD [000588] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 60-206662 [JP 85206662]

FILED: September 20, 1985 (19850920)

#### ABSTRACT

PURPOSE: A novel synthetic \*\*lubricating\*\* \*\*oil\*\* composition slightly causing corrosion of metal and formation of precipitate in almost all metallic components, obtained by blending a synthetic \*\*lubricating\*\* \*\*oil\*\* with a phenolic \*\*antioxidant\*\* and an arylboric acid compound.

CONSTITUTION: A synthetic \*\*lubricating\*\* \*\*oil\*\* is blended with (A) usually 0.1-10wt% phenolic \*\*antioxidant\*\* (e.g., tetrakis(hydroxyaryl polymethyleneoxycarbonylmethyl)methane shown by the formula I (R<sup>(sup 1)</sup> and R<sup>(sup 2)</sup> are H or lower alkyl; n is 1-6 integer), etc.) and (B) usually 0.05-10wt% arylboric acid compound (usually, compound shown by the formula II (\*\*Ar\*\* is aryl; R<sup>(sup 3)</sup> and R<sup>(sup 4)</sup> are H or alkyl), to give the aimed synthetic \*\*lubricating\*\* \*\*oil\*\* composition.

7/7/17 (Item 17 from file: 347)

DIALOG(R)File 347:JAPIO

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01978664 \*\*Image available\*\*

\*\*LUBRICATING\*\* RESIN COMPOSITION

PUB. NO.: 61-192764 [JP 61192764 A]

PUBLISHED: August 27, 1986 (19860827)

INVENTOR(s): MATSUO SHIGERU

MURAKAMI TOMOYOSHI

APPLICANT(s): IDEMITSU KOSAN CO LTD [330172] (A Japanese Company or Corporation), JP (Japan)  
 APPL. NO.: 60-031518 [JP 8531518]  
 FILED: February 21, 1985 (19850221)

## ABSTRACT

PURPOSE: To provide the titled composition which has excellent sliding characteristics and mechanical strength and does not damage opposing members, by blending a fluororesin, a polycyanoaryl ether and a polyester.

CONSTITUTION: 40-90wt% polycyanoaryl ether (A) having such an MW as to give a reduced viscosity of 0.4dl/g or above in a solution of 0.2g/dl of p-chlorophenol at 60 deg.C, composed of at least 50mol% of a repeating unit of formula I (wherein \*\*Ar\*\* is a group of formula II, III or IV) and optionally not more than 50mol% of at least one repeating unit of formula V (wherein \*\*Ar\*\* is aryl different from that of formula I), 5-40wt% fluororesin (B) (e.g. tetrafluoroethylene polymer), 5-40wt% polyester (C) containing a repeating unit of formula VI and additives such as stabilizer, colorant, filler, \*\*antioxidant\*\*, ultraviolet light absorber, etc., are mixed together. The mixture is melt-kneaded and pelletized.

7/7/18 (Item 18 from file: 347)

DIALOG(R) File 347:JAPIO  
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01674069

NOVEL CARBON BLACK

PUB. NO.: 60-152569 [JP 60152569 A]  
 PUBLISHED: August 10, 1985 (19850810)  
 INVENTOR(s): NISHII TOSHIBUMI  
 ITSUBO AKIRA  
 YUI HIROSHI  
 YAMASHITA TOSHIHIKO  
 KIKUCHI KAZUO  
 SHINTOU KATSUO

APPLICANT(s): MITSUBISHI PETROCHEM CO LTD [000605] (A Japanese Company or Corporation), JP (Japan)  
 APPL. NO.: 59-006928 [JP 846928]  
 FILED: January 18, 1984 (19840118)

## ABSTRACT

PURPOSE: To provide carbon black which has a high degree of graphitization, is highly porous and excellent in physical and chemical stabilities and has a specified crystalline structure when determined by X-ray diffraction and a specified specific surface area as measured by BET method.

CONSTITUTION: By-product carbon black having a DBP \*\*oil\*\* absorption of 220ml/ 100g or above and an ash content of 0.3wt% or below obtained by partially \*\*oxidizing\*\* a liquid hydrocarbon (e.g. carbon \*\*oil\*\*) with molecular oxygen in the presence of steam in a quantity of 200-800kg per ton of hydrocarbon at 1,200-1,450c under a pressure of 10-80kg/cm(sup 2), is dried at 300-900c in an N(sub 2) gas atmosphere for 0.5-3hr and then heated at 1,000-3,000c in an \*\*inert\*\* \*\*gas\*\* atmosphere to obtain carbon black having a specific surface area of 100m(sup 2)/g or above as measured by BET method and a crystalline structure wherein L(sub a) is 20-250 angstroms, L(sub s) is 20-250 angstroms and d(002) is 3.55-3.35 when determined by X-ray diffraction.

7/7/19 (Item 19 from file: 347)

DIALOG(R)File 347:JAPIO  
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01492928      \*\*Image available\*\*  
PREPARATION OF \*\*OIL\*\* IMPREGNATED ROLLER

PUB. NO.:        59-204528 [JP 59204528 A]  
PUBLISHED:      November 19, 1984 (19841119)  
INVENTOR(s):    SENBON IKUO  
                  FUKAO HIROSHI  
APPLICANT(s):   MINOLTA CAMERA CO LTD [000607] (A Japanese Company or  
                  Corporation), JP (Japan)  
APPL. NO.:      58-079872 [JP 8379872]  
FILED:          May 06, 1983 (19830506)

#### ABSTRACT

PURPOSE: To suppress the deterioration of an outer peripheral surface layer part made of rubber by preventing \*\*oil\*\* deterioration, by coating the silicone \*\*oil\*\* liquid surface in a silicone \*\*oil\*\* tank with an \*\*inert\*\* \*\*gas\*\* layer.

CONSTITUTION: An isolated chamber 7a is opened and closed by lids 10, 10 and a gas jet nozzle 12 is confronted to the interior of a tank while a gas exhaust port 13 is connected to the outside of the tank. \*\*Inert\*\* \*\*gas\*\* sent through a gas jet nozzle 12 is sucked from the exhaust port 13 to be successively recovered to the side of a gas supply source while the space between a ceiling part and an \*\*oil\*\* liquid surface is always filled with the \*\*inert\*\* \*\*gas\*\* stream and the \*\*oxidation\*\* of silicone \*\*oil\*\* 8 by the atmosphere is suppressed. Therefore, the frequent exchange of the \*\*oil\*\* becomes unnecessary and the deterioration of rubber forming the outer peripheral surface layer part can be also prevented together with the prevention of \*\*oil\*\* deterioration.

7/7/20        (Item 20 from file: 347)

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01210029  
PREPARATION OF OILY GEL PRODUCT

PUB. NO.:        58-147429 [JP 58147429 A]  
PUBLISHED:      September 02, 1983 (19830902)  
INVENTOR(s):    MUSA GIICHI  
                  SO ISAO  
                  USHIYAMA KEIICHI  
APPLICANT(s):   NITTO ELECTRIC IND CO LTD [000396] (A Japanese Company or  
                  Corporation), JP (Japan)  
APPL. NO.:      57-029888 [JP 8229888]  
FILED:          February 25, 1982 (19820225)

#### ABSTRACT

PURPOSE: To obtain an oily gel product having improved flexibility and thermal stability, by adding a crosslinking agent of a peroxide to a system prepared by dissolving a rubber component containing an unsaturated double bond in an excess amount of an oily component to give a compound, gelatinizing the compound through the crosslinking of the rubber component at a specific partial pressure of oxygen.

CONSTITUTION: A rubber component (e.g., natural rubber, etc.) having a crosslinkable unsaturated double bond in a molecule is dissolved in an excess amount of an oily component (e.g., \*\*machine\*\* \*\*oil\*\*, etc.) at room temperature or under heating, and, if necessary, in an \*\*inert\*\* \*\*gas\*\* atmosphere. The resulting substance is blended with a crosslinking

agent of a peroxide (e.g., methyl ethyl ketone peroxide, etc.), and, if necessary, a promotor for crosslinking such as N,N-dimethylaniline, etc., an **\*\*antioxidant\*\***, etc. The blend is heated uniformly at a temperature below the decomposition temperature of the crosslinking agent to give a compound, which is cast into a mold with a given shape and heated in an atmosphere of an oxygen partial pressure of  $\leq 10\text{mmHg}$  (at  $25^\circ\text{C}$ ) at about  $60\text{--}170^\circ\text{C}$  for  $5\text{--}360\text{min}$ , and the rubber component in the compound is crosslinked so that the compound is gelatinized, to give an oily gel product.

USE: A gel mat material, artificial cup of the breasts, etc

**7/7/21 (Item 21 from file: 347)**

DIALOG(R)File 347:JAPIO

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00608649

METHOD FOR PREVENTING **\*\*OXIDATION\*\*** OF CUT MATERIAL WITH **\*\*INERT\*\*** **\*\*GAS\*\***

PUB. NO.: 55-096249 [JP 55096249 A]

PUBLISHED: July 22, 1980 (19800722)

INVENTOR(s): HIGURE MINORU

APPLICANT(s): HIGURE MINORU [000000] (An Individual), JP (Japan)

APPL. NO.: 54-000743 [JP 79743]

FILED: January 10, 1979 (19790110)

#### ABSTRACT

PURPOSE: To prevent the heat generation in the blade of cutting tool and the **\*\*oxidation\*\*** and heat generation of cut material in the cutting work by blowing **\*\*inert\*\*** **\*\*gas\*\*** to the blade of cutting **\*\*machine\*\*** and cut work.

CONSTITUTION: When iron and non-ferrous metals are recovered from crushing scrap iron and scrap non-ferrous metals with cutters of high speed or high revolution speed at shredders, dust and gases of plastics, paint gases, **\*\*oil\*\***, volatile matters, impure gases, etc., are generated, therefore, there is danger of causing dust explosion ignited by heated cutters and cut materials. To avoid such danger, **\*\*inert\*\*** **\*\*gas\*\*** atmosphere is formed by blowing **\*\*inert\*\*** **\*\*gas\*\*** to the cutter of a cutting **\*\*machine\*\*** and cut materials, resulting in the condition wherein, especially **\*\*oxidation\*\***, heat generation and ignition are prevented quickly.

**7/7/22 (Item 1 from file: 351)**

DIALOG(R)File 351:DERWENT WPI

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010926242 **\*\*Image available\*\***

WPI Acc No: 96-423193/199642

**Degreasing method for removing cutting, rust preventive **\*\*lubricating\*\*** or quenching **\*\*oil\*\*** from workpieces - comprises placing workpieces in sealed chamber, replacing chamber gas with non- or slightly **\*\*oxidising\*\*** gas, evaporating oils from workpieces, and condensing oils evaporated**

Patent Assignee: LEE H (LEE-H-I); NIPPON TECHNO CO LTD (NITE-N)

Inventor: KABASAWA H; LEE H

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
KR 9411253	B1	19941203	KR 9212048	A	19920707	C23G-005/00	199642 B

Priority Applications (No Type Date): KR 9212048 A 19920707



Abstract (Basic): \*\*KR\*\* 9411253 B

Degreasing method comprises: (a) confining the articles in a sealed chamber; (b) replacing the atmosphere with a replacer gas selected from a non-**\*\*oxidising\*\*** gas and a slightly **\*\*oxidative\*\*** gas; (c) evaporating the oils from the article and then recovering to condense the evaporated oils included in the replacer gas; and (d) exhausting the evaporated oils impossible to be recovered with the replacer gas.

The appts. used for carrying out the above degreasing method is also claimed and is shown in the figure.

USE - The method is used for removing oils such as cutting **\*\*oil\*\***, rust preventive **\*\*lubricating\*\*** **\*\*oil\*\*** and quenching **\*\*oil\*\*** from **\*\*machine\*\*** parts or tools.

Dwg.1/1

Derwent Class: M12

International Patent Class (Main): C23G-005/00

7/7/23 (Item 2 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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009910058

WPI Acc No: 94-177764/199422

**Low alloy sintered steel with excellent fatigue strength and toughness - has a martensite matrix with prior austenite grains, pores and inclusions, for mfr of **\*\*machine\*\*** gear and races**

Patent Assignee: SUMITOMO ELECTRIC IND CO (SUME )

Inventor: ITO K; ITOH Y; TAKEDA Y

Number of Countries: 006 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
EP 600421	A1	19940608	EP 93119225	A	19931129	C22C-038/00	199422 B
JP 6212368	A	19940802	JP 93326304	A	19931130	C22C-038/00	199435
US 5427600	A	19950627	US 93159808	A	19931130	C22C-009/12	199531
EP 600421	B1	19971008	EP 93119225	A	19931129	C22C-038/00	199745
DE 69314438	E	19971113	DE 614438	A	19931129	C22C-038/00	199751
			EP 93119225	A	19931129		

Priority Applications (No Type Date): JP 92343145 A 19921130

Cited Patents: DE 2555679; GB 2065700; GB 2219004

Patent Details:

Patent	Kind	Lan	Pg	Filing	Notes	Application	Patent
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EP 600421	A1	E	14				
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Designated States (Regional): DE FR GB SE

JP 6212368	A	8
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US 5427600	A	11
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EP 600421	B1	E	16
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Designated States (Regional): DE FR GB SE

DE 69314438	E	Based on
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EP 600421

Abstract (Basic): EP 600421 A

A low alloy sintered steel contains at least 0.15 wt.% but less than 0.8 wt.% C. The matrix is tempered martensite contg. prior austenite crystal grains with a mean grain size of not more than 15 microns. The matrix has pores, non-metallic inclusions of max. dia. not larger than 50 microns, and a density of at least 96% of the theoretical density.

The steel is mfd. by: (i) treating raw material powder contg. at least one or atomised Fe or Fe alloy powder, in an inert atmos. of air, with a dry mill to introduce dislocations into the powder and pulverise non-metallic inclusions; (ii) softening/annealing the treated powder; (iii) adding and mixing the C; (iv) cold-forming the power to obtains a compact; (v) densifying the compact by sintering or hot plastic

working; and (vi) heat treating the compact.

At least one of an oxide, carbide or nitride, with a mean particle size of not more than 0.5 microns, has at most a low solid solubility in the austenite phase, and is homogeneously dispersed in the matrix. The particles (pref. alumina) are added to the raw material powder in an amt. of 0.5-5 vol.% prior to treatment in a dry mill. The steel contains (wt.%): 10-300 ppm B, 0.05-3 of at least one of Nb, V, Ti, W and Al (added prior to dry milling) and 0.5-3 Cr, 0.1-1.5 Mo, 0.2-1.6 Mn, 0.5-3 Si and 0.1-1.5 Cu. Step (ii) is carried out in a vacuum of non-oxidising atmos. at 600-1000 deg.C. Ferrobore powder is then added.

USE/ADVANTAGE - The steel is used in the mfr. of structural parts for machines, such as gears or a bearing race. The steel has excellent fatigue strength and toughness.

In an example, an Fe alloy powder (contg. 1.8 wt.% Fe, 0.5 wt.% Ni, Mo) was mixed with 5 vol.% alumina powder of mean particle size 0.05 microns. The powder mixt. was treated in a dry mill under Ar for 40 hrs. The material was then annealed/softened under N<sub>2</sub> at 800 deg.C for 1 hr., mixed with graphite powder, cold-formed, sintered in N<sub>2</sub> at 1150 deg.C for 1 hr. and forged to produce a real:theoretical density ratio of at least 0.99. The forged body was carburised at 910 deg.C, held at 850 deg.C, quenched in oil and tempered at 200 deg.C for 90 mins. On testing, the resulting steel has a prior austenite grains size of 2.5 microns, a transverse rupture strength of 342 kg per mm<sup>2</sup>, an impact value of 5.9 kgf.m per cm<sup>2</sup> and a fatigue strength of 120 kg per mm<sup>2</sup>.

Dwg.0/3

Abstract (Equivalent): EP 600421 B

A low alloy sintered steel containing at least 0.15 percent by weight and less than 0.8 percent by weight of carbon and having a matrix of a tempered martensite containing prior austenite crystal grains of not more than 15 micron in mean grain size, the matrix containing pores and nonmetallic inclusions of not more than 50 micron in maximum diameter, and having a density of at least 96 percent of the theoretical density, the matrix optionally containing particles prepared from at least one of an oxide, nitride and carbide, the low alloy sintered steel containing optionally at least one element selected from boron, niobium, vanadium, titanium, tungsten, aluminium, nickel, molybdenum, chromium and manganese in the following amounts: at least 10 ppm and not more than 300 ppm of boron; at least 0.05 percent by weight and not more than 3.0 percent by weight in total of at least one element selected from niobium, vanadium, titanium, tungsten and aluminium; at least 0.5 percent by weight and not more than 3 percent by weight of nickel; at least 0.1 percent by weight and not more than 1.5 percent by weight of molybdenum; at least 0.5 percent by weight and not more than 3 percent by weight of chromium; and at least 0.2 percent by weight and not more than 1.6 percent of manganese.

Dwg.0/3

Abstract (Equivalent): US 5427600 A

Low alloy sintered steel contains 0.15-less than 0.8 wt.% C and may include 0.05-3.0 wt.% of at least one member of the gp. Nb, V, Ti, W and Al. It has a matrix of tempered martensite contg. prior austenite grains not more than 15 mm in mean grain size. Pores and non-metallic inclusions are not more than 50 mm max. dia. and density is at least 96% theoretical. Steel is mfd. from atomised Fe and/or Fe alloy powder, treated in a dry mill to introduce dislocations, annealed, and mixed with C powder before compacting, sintered or hot worked and heat treated.

USE - For e.g. gear, bearing race.

ADVANTAGE - Provides improved cinnamic characteristics, partic. fatigue strength.

Dwg.1/3

Derwent Class: M27; P53

International Patent Class (Main): C22C-009/12; C22C-038/00

International Patent Class (Additional): B22F-001/00; B22F-003/24;  
C22C-033/02

7/7/24 (Item 3 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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009292205

WPI Acc No: 92-419615/199251

**Oxidn.-resistant fat and \*\*oil\*\* compsn. prepn. for food processing  
\*\*machine\*\* - by ester-exchanging satd. fatty acid triglyceride with  
coconut and/or palm kernel \*\*oil\*\* contg. unsatd. fatty acid**

Patent Assignee: NIPPON OIL KK (NIOC )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 4314790	A	19921105	JP 91108369	A	19910412	C10M-105/38	199251 B

Priority Applications (No Type Date): JP 91108369 A 19910412

Patent Details:

Patent	Kind	Lan	Pg	Filing Notes	Application	Patent
JP 4314790	A		6			

Abstract (Basic): JP 4314790 A

The compsn. is prepd. by ester-exchanging (A) 40-90 wt.% of a middle-chain satd. fatty acid triglyceride(s) with 60-10 wt.% of coconut and/or palm kernel \*\*oil\*\* of a content of unsatd. fatty acids of up to 8 wt.%.

The compsn. pref. has a cloud pt. of up to 5 deg. C and an oxidn. stability, measured by the active oxygen method, of at least 300 hr.

USE/ADVANTAGE - The compsn. is safe and inexpensive and has high oxidn. resistance and lubricity and an appropriate cloud pt., being effective for food processing \*\*machines\*\*, esp. their driving pts. such as chains and shafts.

In an example, middle-chain satd. fatty acids include caproic, heptylic, caprylic, nonylic and an capric acids. The coconut and/or palm kernel \*\*oil\*\* is typically prepd. by hydrogenating the raw oils. The ester exchange is usually done at 80-100 deg. C in an \*\*inert\*\* \*\*gas\*\*, such as N<sub>2</sub>, in the presence of 0.05-1 wt.% of a catalyst, such as Na methylate for 30 min to 2 hr.

Dwg.0/0

Derwent Class: D13

International Patent Class (Main): C10M-105/38

International Patent Class (Additional): C10N-020-00; C10N-030-10;

C11C-003/10

7/7/25 (Item 4 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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009207848

WPI Acc No: 92-335269/199241

**Mfr. of seam-welded steel pipes - comprises welding in non-oxidising  
atmos. contg. less than 0.1 per cent oxygen@ and having specific max. dew  
point**

Patent Assignee: NIPPON STEEL CORP (YAWA )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 4238677	A	19920826	JP 911224	A	19910109	B23K-013/06	199241 B

Priority Applications (No Type Date): JP 911224 A 19910109

Patent Details:

Patent	Kind	Lan	Pg	Filing Notes	Application	Patent
JP 4238677	A		3			

Abstract (Basic): JP 4238677 A

The process comprises seam-welding steel pipes in a non-  
**\*\*oxidising\*\*** atmos. The atmos. contains 0.1% or less O and has a dew  
 point of -10 deg.C or lower.

The atmos. more pref. has a dew point of -25 deg.C or less.

USE/ADVANTAGE - Used as line pipes of **\*\*oil\*\*** and natural gas  
 plants, **\*\*oil\*\***-well pipes, etc., as well as pipes for use in nuclear  
 power plants, geothermal power plants, chemical plants, and also as  
**\*\*machine\*\*** structural parts.

In an example, a descaled sheet steel was high frequency wave  
 induction welded or resistance welded favourably in **\*\*Ar\*\*** gas contg.  
 0.0005% O and having a dew point of -25 deg.C

Dwg.0/1

Derwent Class: H01; K06; M23; P55

International Patent Class (Main): B23K-013/06

7/7/26 (Item 5 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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008324511

WPI Acc No: 90-211512/199028

**\*\*Antioxidant\*\* additive for \*\*lubricating\*\* oils - comprises aromatic  
 nitrogen-contg. cpd., used for IC engines and \*\*machining\*\***

Patent Assignee: ELF ANTAR FRANCE (ERAP ); ELF FRANCE (ERAP )

Inventor: AZORIN P; GERMANAUD L; TURELLO P

Number of Countries: 008 Number of Patents: 007

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
EP 377358	A	19900711	EP 89403355	A	19891205		199028 B
FR 2639956	A	19900608	FR 8815913	A	19881205		199030
JP 2194094	A	19900731	JP 89316334	A	19891205		199036
EP 377358	B1	19930324	EP 89403355	A	19891205	C10M-133/12	199312
DE 68905587	E	19930429	DE 605587	A	19891205	C10M-133/12	199318
			EP 89403355	A	19891205		
US 5269954	A	19931214	US 89445392	A	19891204	C10M-135/36	199350
			US 91799700	A	19911125		
JP 2797007	B2	19980917	JP 89316334	A	19891205	C10M-133/12	199842

Priority Applications (No Type Date): FR 8815913 A 19881205

Cited Patents: A3...9038; EP 149422; FR 2140646; FR 917987; GB 672875; GB  
 684640; NoSR.Pub; US 3402200; US 3647694; US 4116875; US 4247300; WO  
 8802007

Patent Details:

Patent	Kind	Lan	Pg	Filing Notes	Application	Patent
EP 377358	A		8			

Designated States (Regional): BE DE FR GB IT NL

EP 377358	B1	F	9
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Designated States (Regional): BE DE FR GB IT NL

DE 68905587	E		Based on	EP 377358
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US 5269954	A	5	Cont of	US 89445392
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JP 2797007	B2	5	Previous Publ.	JP 2194094
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Abstract (Basic): EP 377358 A

**\*\*Antioxidant\*\* additive for \*\*lubricating\*\* oils** contains an  
 aromatic N and is of formula (I) where **\*\*Ar\*\*** and Ar1 = same or  
 different aromatic gp. Ar1 may be replaced by H, or **\*\*Ar\*\*** and Ar1 are

linked together to form with the N an aromatic heterocyclic structure, R and R1 = same or different 2-12C opt. branched alkylene, opt. substd. by halogen, or -OH or -NH2. X = O, S or NH, a = 0-5, and Y = N, R1, R2 (R1 and R2 = H, alkyl, alkenyl, cycloalkyl, or aryl (1-12C) alkyl), -N=CH-Ar\*\*, (Ar1 = aryl gp. contg. at least one phenolic gp), -NR-CO-Ar1, or a gp. of formula (i), R3 = H or (un)satd. opt. branched alkyl.

Also claimed is a \*\*lubricating\*\* compsn. contg. a natural or synthetic \*\*lubricating\*\* \*\*oil\*\* and 0.01-10 (0.1-2.5) wt. % of the additive.

USE - For oils used in I.C. engines and metal works. (8pp  
Dwg.No.0/0

Abstract (Equivalent): EP 377358 B

Additives to \*\*lubricating\*\* oils having an anti-oxidant effect comprising an aromatic nitrogen, characterised in that they correspond to the general formula (I) wherein \*\*Ar\*\* and \*\*Ar\*\*' are connected to one another so as to form with the nitrogen to which they are linked an aromatic heterocyclic structure selected from the group comprising phenothiazine, imidazole, benzimidazole, triazole or benzotriazole; -R and R', which may be identical or different, represent a C2 to C18 linear or branched alkylene radical, optionally substituted by a halogen or a -OH or -NH2 group; - X represents an oxygen or sulphur atom of a -NH- group; and - a is an integer between 0 and 5 and Y is selected from the group formed by -NR1R2 (II) wherein; R1 and R2, which may be identical or different, represent a hydrogen atom of a C1 to C12 alkyl, alkenyl, cycloalkyl or arylalkyl radical; wherein Ar1 is an aryl radical containing at least one phenolic group selected from the group comprising phenol, p-terbutylphenol, diterbutyl-2,4-phenol, diteramyl-2,4-phenol, diterbutyl-paracresol, dodecylphenol, sulphurised dodecylphenol, catechol, beta-naphthol or resorcinol -NR1-CO-Ar1 (IV) and (V) wherein; R3 is a hydrogen atom or an oligomer of a C2 to C5 olefin of which the molecular weight is between 500 and 3000 and is preferably between 800 and 1500.

(Dwg.0/0

Abstract (Equivalent): US 5269954 A

An \*\*antioxidant\*\* for a \*\*lubricating\*\* \*\*oil\*\* is (A) Q2N-(R-X)a-R-Y or (B) Q2N-(R-O)a-R-NR'2 or (C) Q2N-(R-O)-R-(1). In the formulae, the 2 Q together with the N form a phenazine structure opt. substd. OH, halogen, 1-12C alkyl, aryl, alkoxy or alkylthio; R is 2-18C (branched) alkyl opt. substd. by OH or NH2; X is -NH-; a is 1-5; Y is -NR'2; R' is H or -N=CH-Q'; Q' is a radical contg. at least 1 phenolic gp., -NR'-CO-Q' or (1); R'' is H or (branched), (substd.) alkyl.

R is pref. 2-4C (branched) alkylene; n is 0-2; R'' is an oligomer of a 2-5C olefin or mol.wt. 500-3000, esp. 800-1500. The \*\*oil\*\*. pref. contains 0.01-10 wt.% \*\*antioxidant\*\* and opt. also corrosion inhibitors, detergents, antiwear dispersants and antifoams.

ADVANTAGE - A more readily soluble \*\*antioxidant\*\* giving better protection than known ones is provided.

Dwg.0/0

Derwent Class: E13; E14; H07

International Patent Class (Main): C10M-133/12; C10M-135/36

International Patent Class (Additional): C07D-279/18; C07D-279/24; C07D-279/36; C09K-015/18; C10M-133/14; C10M-133/16; C10M-133/22; C10M-133/38; C10M-135/20; C10M-149/02; C10N-030/10; C10N-030-10; C10N-040-04; C10N-040-25

7/7/27 (Item 6 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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008308591

WPI Acc No: 90-195592/199026

**Multifunctional additives for lubricants - obtd. by condensn. of polyamine cpds. with copolymers contg. carboxylic gps.**

Patent Assignee: ELF AQUITAINE (ERAP ); SOC NAT ELF AQUITAINE (ERAP )

Inventor: GERMANAUD L; MARIE G; TRUONG D; TURELLO P; TRUONG D N

Number of Countries: 008 Number of Patents: 007

**Patent Family:**

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
EP 375503	A	19900627	EP 89403428	A	19891211		199026 B
FR 2640272	A	19900615	FR 8816336	A	19881212		199031
JP 2225596	A	19900907	JP 89320736	A	19891212		199042
US 5055213	A	19911008	US 89447171	A	19891207		199143
EP 375503	B1	19960228	EP 89403428	A	19891211	C08F-008/32	199613
DE 68925805	E	19960404	DE 625805	A	19891211	C08F-008/32	199619
			EP 89403428	A	19891211		
JP 2930627	B2	19990803	JP 89320736	A	19891212	C10M-149/14	199936

Priority Applications (No Type Date): FR 8816336 A 19881212

Cited Patents: 1.Jnl.Ref; EP 112195; EP 274589; EP 291367; FR 2393058;

GB 1400727; JP57195104; 00 1Jnl.Re; 00 DE0332; 50 GB0154; 40 GB0209; 00

US0370; 00 US0416; 90 US0432; 90 US0467; 30 WO0870; 00 WO0890

**Patent Details:**

Patent	Kind	Lan	Pg	Filing	Notes	Application	Patent
EP 375503	A		12				

Designated States (Regional): BE DE FR GB IT NL

US 5055213	A		8
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EP 375503	B1	F	17
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Designated States (Regional): BE DE FR GB IT NL

DE 68925805	E		Based on	EP 375503
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JP 2930627	B2		8 Previous Publ.	JP 2225596
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**Abstract (Basic): EP 375503 A**

New polymeric multifunctional additives for lubricants consist of the resulting condensn. of a prim. or sec. amine and/or an alkylene polyamine of formula (I) where \*\*Ar\*\* and \*\*Ar\*\*' = aromatic (identical or different); \*\*Ar\*\*' may be H or \*\*Ar\*\* and \*\*Ar\*\*' may be linked to form a ring. R1 = H, alkyl 1-18C (pref. Me) or aryl (pref. phenyl). X = H, Hal, OH, or NH2. a = 0-5 and b = 0-6, and a+b is greater or equal to 1 with a copolymer having vicinal COOH gps. and a mol.wt. greater or equal to 20,000.

\*\*Lubricating\*\* \*\*oil\*\* compsns. contg. a high proportion of natural or synthetic \*\*oil\*\* and a small amt. of the additive are also claimed.

USE/ADVANTAGE - The additives act as viscosity improvers and \*\*antioxidants\*\*. \*\*Oil\*\* compsns. contg. them can be used as engine sump oils, gear oils and for metal \*\*machining\*\*. (12pp Dwg.No.0/0)

**Abstract (Equivalent): EP 375503 B**

Multi-functional polymeric additives to lubricants, characterised in that they result from the condensation of an alkylene polyamine of the general formula (I) wherein \*\*Ar\*\* is an aromatic radical and \*\*Ar\*\*' is either a hydrogen atom or a second aromatic radical optionally forming with \*\*Ar\*\* and the nitrogen atom to which they are attached a heterocyclic structure, onto a copolymer having vicinal carboxylic groupings and of which the average molecular weight is 20,000.

Dwg.0/0

**Abstract (Equivalent): US 5055213 A**

Compsns. contg. an additive obtd. from condensation of at least one prim. amine, sec. amine or alkylene polyamine of formula (I) with maleic anhydride gps. with a wt. average molecular mass of at least 2000. In (I), \*\*Ar\*\* and \*\*Ar\*\*' are linked to form heterocyclic structure; R1=H, 1-18C opt. branched alkyl radical, or aromatic radical; X = H, halogen, OH or NH2; a and b = integens, a = 0-5, b = 0-6, and a+b is at least 1. USE/ADVANTAGE - Additives improve the

viscosity of **\*\*lubricating\*\*** compsns. while acting as a dispersant and **\*\*antioxidant\*\***.

(8pp)

Derwent Class: A14; A97; H07

International Patent Class (Main): C08F-008/32; C10M-149/14

International Patent Class (Additional): C08F-291/00; C10M-105/08;

C10M-133/12; C10M-133/38; C10M-145/14; C10M-145/16; C10M-149/00;

C10M-159/12; C10N-030-02; C10N-040-25

7/7/28 (Item 7 from file: 351)

DIALOG(R) File 351:DERWENT WPI

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004326505

WPI Acc No: 85-153383/198526

**Corrosion-protection and preservation of articles **\*\*oxidisable\*\*** by oxygen - by covering with **\*\*gas\*\***-impermeable **\*\*inert\*\*** material inert material and filling remaining space with **\*\*inert\*\*** **\*\*gas\*\*****

Patent Assignee: ZIEGELER H (ZIEG-I)

Inventor: ZIEGELER H

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
DE 3341513	A	19850620	DE 3341513	A	19831117		198526 B

Priority Applications (No Type Date): DE 3341513 A 19831117

Patent Details:

Patent	Kind	Lan	Pg	Filing Notes	Application	Patent
DE 3341513	A		3			

Abstract (Basic): DE 3341513 A

In the corrosion-protection and preservation of articles **\*\*oxidisable\*\*** by O<sub>2</sub>, preservation is achieved by (i) **\*\*inert\*\*** **\*\*gases\*\***, e.g. **\*\*He\*\***, Ne, Ar, **\*\*Kr\*\***, **\*\*Xe\*\***, **\*\*Rd\*\*** or also reaction-**\*\*inert\*\*** **\*\*gases\*\*** e.g. N<sub>2</sub> or CCl<sub>2</sub>F<sub>2</sub>, protected by (ii) inert polymers, e.g. of C<sub>3</sub>H<sub>6</sub>, iso-C<sub>4</sub>H<sub>8</sub>, C<sub>2</sub>F<sub>4</sub>, C<sub>2</sub>ClF<sub>3</sub> or methacrylic acid esters or also glass, porcelain, quartz and metal oxides.

USE/ADVANTAGE - Articles of any type and size can be protected, e.g. suspending wires for suspension bridges, **\*\*machinery\*\***, vehicles, car old-timers, rockets, electronic devices, **\*\*oil\*\***-paintings, carpets, aeroplanes, ships, tyres, video-recorders. Maintenance-free, long-time preservation is achieved. The type of gas and surrounding material can be chosen w.r.t. the value and size of the articles, type of material, time of preservation and ambient temps.. Articles having inaccessible cavities can be preserved perfectly. Objects having the most different structures, e.g. vehicles, can be protected against corrosion under one roof, using only one medium.

0/0

Derwent Class: A93; M14

International Patent Class (Additional): C09K-015/00; C23F-015/00

7/7/29 (Item 8 from file: 351)

DIALOG(R) File 351:DERWENT WPI

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004268960

WPI Acc No: 85-095838/198516

**Steel reforming master alloy - comprises manganese and bismuth**

Patent Assignee: SHOWA DENKO KK (SHOW )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 60043449	A	19850308	JP 83149163	A	19830817		198516 B

Priority Applications (No Type Date): JP 83149163 A 19830817

Patent Details:

Patent	Kind	Lan	Pg	Filing Notes	Application	Patent
JP 60043449	A		5			

Abstract (Basic): JP 60043449 A

An alloy useful as a steel reforming agent comprises (in % wt.): 10-90 Mn and 90-10 Bi except inevitable impurities. The Mn and Bi are entirely or partially formed into an intermetallic cpd.  $Mn_xBi_{1-x}$  (e.g.  $MnBi$ ,  $MnBi_2$  or  $Mn_2Bi_3$ ).

The master alloy may be prepd. by sintering the powder compsn. of Mn and Bi. The sintering is performed at 250-400 deg.C in a non-**\*\*oxidising\*\*** atmosphere, e.g. **\*\*Ar\*\***, **\*\*He\*\***,  $N_2$  or vacuum.

USE/ADVANTAGE - When Bi is added to steel melt, the steel has excellent **\*\*machinability\*\***, **\*\*lubricativeness\*\***, magnetic properties, etc.. However Bi has very low solubility in steel and high evaporation rate. The efficiency of addition of Bi is now improved by adding Bi alloyed with Mn, which acts as a deoxidising agent in the steel making process and suppresses the harmful influence of S.

0/2

Derwent Class: M26

International Patent Class (Additional): C22C-012/00; C22C-022/00

7/7/30 (Item 9 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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004176997

WPI Acc No: 85-003877/198501

**\*\*Oil\*\* impregnated roller prodn. - by immersing rubber coated roller in   
 \*\*oil\*\* under **\*\*inert\*\*** **\*\*gas\*\*** layer**

Patent Assignee: MINOLTA CAMERA KK (MIOC )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 59204528	A	19841119	JP 8379872	A	19830506		198501 B

Priority Applications (No Type Date): JP 8379872 A 19830506

Patent Details:

Patent	Kind	Lan	Pg	Filing Notes	Application	Patent
JP 59204528	A		6			

Abstract (Basic): JP 59204528 A

A roller having its peripheral surface layer made of rubber material is immersed in an **\*\*oil\*\*** tank and the peripheral surface of the roller is impregnated with **\*\*oil\*\***. The surface of the **\*\*oil\*\*** in the tank is covered with an **\*\*inert\*\*** **\*\*gas\*\*** layer.

USE/ADVANTAGE - The method is used to impregnate with **\*\*oil\*\*** a heat roller incorporated in an **\*\*oil\*\*** coating type fixation unit of electronic copying **\*\*machine\*\***. The **\*\*oil\*\*** is prevented from being **\*\*oxidised\*\*** by the air, to prevent its deterioration and hence the **\*\*oil\*\*** need not be changed frequently, resulting in lower costs. The method also prevents the rubber on the periphery of the roller from being degraded.

0/4

Derwent Class: A88; P42; P84

International Patent Class (Additional): B05D-001/18; B05D-007/24;

B29H-007/00; B29H-009/12; G03G-015/20



7/7/31 (Item 10 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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002302199

WPI Acc No: 80-A8631C/198004

**Bearing \*\*lubrication\*\* system for stationary turbo-**\*\*machinery\*\*** - has  
**\*\*inert\*\* \*\*gas\*\*** source and fan between **\*\*oil\*\*** traps and drainage pipe  
 to reduce lubricant **\*\*oxidation\*\*****

Patent Assignee: URAL THERMOTECH RES (URAL-R)

Inventor: KAZANSKII V N

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat	No	Kind	Date	Main IPC	Week
SU 661171	A	19790515						198004 B

Priority Applications (No Type Date): SU 2418801 A 19761101

Abstract (Basic): SU 661171 A

A bearing unit **\*\*lubrication\*\*** system, for use e.g. in stationary turbines, consists of **\*\*oil\*\*** traps, (5), a used **\*\*oil\*\*** casing (1) and a drainage pipe (10) linking the **\*\*oil\*\*** traps to collector. The **\*\*lubrication\*\*** system is designed for reduced lubricant oxidn. by incorporating a source (19) of **\*\*inert\*\* \*\*gas\*\*** (e.g. nitrogen) and a fan (18) which has its suction side linked to the drainage pipe (10) and the **\*\*inert\*\* \*\*gas\*\*** source, and its pressure side to the **\*\*oil\*\*** traps (5). The drainage pipe (10) is sealed to the casing (1) which has drainage aperture connected by a hydraulic lock (13) to the external section of the drainage pipe (11).

Derwent Class: Q62

International Patent Class (Additional): F16C-017/02; F16C-033/10

7/7/32 (Item 11 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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001862321

WPI Acc No: 77-83354Y/197747

**\*\*Machinable\*\* seamless steel tubes contg. lead - made by compacting  
 pre-reduced concentrate, sintering and extruding**

Patent Assignee: CEFILAC (COFM )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat	No	Kind	Date	Main IPC	Week
FR 2340496	A	19771007						197747 B

Priority Applications (No Type Date): FR 763539 A 19760203

Abstract (Basic): FR 2340496 A

A seamless tube is mfrd. from mild or alloy steel contg. Ni, Cu, Mo, W, Mn, Cr and 0.4-2% Pb and opt. <1% S, Se, Te, Sn, Zn or Bi.

The tube is mfrd. by homogeneously mixing powdered pre-reduced iron ore concentrate (having non-reducible oxides content <1%) with Pb (cpd.) powder, the particle size being less than or equal to that of the ore. A lubricant, a C-contg. reducing agent in liq. or powder form and opt. a binder are also added.

The mixt is compacted into the shape of a hollow blank and heated in a furnace to 1100-1350 degrees C in a flow of **\*\*inert\*\*** or reducing **\*\*gas\*\***. The resulting porous non-**\*\*oxidised\*\*** blank is extruded into a tube using conventional **\*\*lubrication\*\*** techniques.

The seamless tube has improved **\*\*machinability\*\*** comparable to

tubes of free-**\*\*machining\*\*** steel which do not contain Pb. The mechanical properties are not deleteriously affected by the Pb addn.  
 Derwent Class: M22; M24; Q67  
 International Patent Class (Additional): C21B-013/14; C22C-038/40; F16L-009/02

**7/7/33 (Item 12 from file: 351)**  
 DIALOG(R)File 351:DERWENT WPI  
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001604738

WPI Acc No: 76-39144X/197621

**Directly stretched steel wire - coiled in bath of **\*\*lubricating\*\*** and corrosion-preventing film**

Patent Assignee: NIPPON STEEL CORP (YAWA )

Number of Countries: 001 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 51042058	A	19760409					197621 B
JP 79006025	B	19790323					197916

Priority Applications (No Type Date): JP 74116361 A 19741009

Abstract (Basic): JP 51042058 A

Pipes contg. **\*\*inert\*\*** **\*\*gas\*\*** to provide a non-**\*\*oxidising\*\*** atmosphere, are placed between the final rolling stand and the wire coiling **\*\*machine\*\***. The wire is conducted from the rolling stand through the pipes to the coiling **\*\*machine\*\*** and is coiled in the bath of **\*\*lubricating\*\*** and corrosion-preventing agent. Thus the steel wire is coated with a **\*\*lubricating\*\*** and corrosion-preventing film which prevents the formation scales obviating subsequent scale removal.

Derwent Class: M21; P51

International Patent Class (Additional): B21C-001/00; B21C-009/00

**7/7/34 (Item 13 from file: 351)**  
 DIALOG(R)File 351:DERWENT WPI  
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000701157

WPI Acc No: 70-38256R/197022

**Complex al greases of high stability**

Patent Assignee: CHEVRON RES CO (CALI )

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
US 3514400	A						197022 B

Priority Applications (No Type Date): US 67655350 A 19670724; US 65451068 A 19650426

Abstract (Basic): US 3514400 A

The aluminium compds. are partially neutralised aluminium mixed carboxylic acid salts of the general formula (where R is 7-29C alkyl, R' is H in lower alkyl radical, at least one half of R' being H, **\*\*Ar\*\*** is 6-11 C aromatic hydrocarbon, x and y are at least 0.25 and x+y is 1.5-2.5, z is 0.5-1.5 and x+y+z is 3). These aluminium compds. provide thickening to the **\*\*oil\*\***. Thermal and **\*\*oxidative\*\*** stability is provided by the alkali metal aroates, the alkali metal being of atomic no. 3-9 (pref. sodium). The aromatic carboxylic acid has 7-12C atoms with the carboxyl group bonded directly to the ring. The prefd. acid is benzoic acid.

The greases have a long life and may be used for **\*\*lubricating\*\***  
**\*\*machinery\*\*** in the presence of food.

Derwent Class: D14; E12; H07

International Patent Class (Additional): C10M-005/14

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Comp&distr 1998 NTIS, Intl Copyright All Righ

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File 32:METADEX(R) 1966-2000/May B2  
(c) 2000 Cambridge Scientific Abs

File 33:Aluminium Ind Abs 1968-2000/Mar  
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File 335:Ceramic Abstracts 1976-2000/Q1  
(c) 2000 Cambridge Scientific Abs.

File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec  
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Set	Items	Description
S1	1287333	HE OR HELIUM OR AR OR ARGON OR KRYPTON OR KR OR XENON OR XE OR RADON OR RD

S2 75518 (INERT OR NOBLE) (2N) (GAS OR GASES)  
 S3 1147679 OXIDAT? OR OXIDI? OR ANTIOXID?  
 S4 1729102 MACHIN?  
 S5 1253301 LUBRICAT? OR OIL OR GREASE  
 S6 35 (S1 OR S2) AND S3 AND S4 AND S5  
 S7 32 RD (unique items)  
 S8 84408 ANTI()OXID? OR ANTIOXID?  
 S9 0 S8(5N) (S1 OR S2) AND S4 AND S5  
 S10 2 S8 AND S4 AND S5 AND (S1 OR S2)

**10/7/1 (Item 1 from file: 103)**

DIALOG(R)File 103:ENERGY SCITEC

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01401701 FRG-84-05305; EDB-84-099500

**Title: Manufacture, properties and operational behaviour of steam-turbine oils**

Author(s): Sommer, E.

Original Title: Herstellung, Eigenschaften und Betriebsverhalten von Dampfturbinenoelen

Source: Elektrizitaetswirtschaft (Germany, Federal Republic of) v 81:17/18  
 . Coden: EKZWA

Publication Date: 30 Aug 1982 p 556-560

Language: German

Abstract: Turbine \*oil\* makes a considerable contribution to the operational reliability and availability of steam-turbine sets in power stations. The author reports on the present state of engineering and operational experience. \*He\* gives a short account of technical development.

**10/7/2 (Item 2 from file: 103)**

DIALOG(R)File 103:ENERGY SCITEC

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01247153 EDB-83-147154

Author(s): Eminov, E.A.; Bogdanov, Sh.K.; Dovgopolyi, E.E.; Gryaznov, B.V.; Ivanov, V.S.; Ivanova, Z.M.; Kozlova, E.K.; Nikolaeva, N.M.; Rozhdestvenskaya, A.A.

**Title: Turbine \*oil\***

Patent No.: SU 2749552

Patent Date Filed: Filed date 9 Apr 1979

Publication Date: 10 Mar 1981 p v

Note: PAT-APPL-810768

Language: Russian

Availability: Plenum Publishing Corp., New York, NY.

Abstract: In the known turbine \*oil\* (TO), for the purpose of improving the anticorrosion and demulsifying properties, a polyoxypropylene glycol ether, ethylenediamine or propylene glycol or an alkylphenol are additionally introduced, where the C/sub 8/-C/sub 12/ alkyl has a molecular weight of 2000-10,000. The proportions of the components are: 2, 6-di-tert-butyl-4-methylphenol 0.2-1.0%, quinizarin 0.01-0.05%, an acid ester of an alkenylsuccinic acid 0.02-0.1%, a polyoxypropylene glycol ether 0.02-0.2%, polymethylsiloxane 0.003-0.005%, and petroleum \*oil\* the remainder. The TO is prepared by mixing the petroleum \*oil\* with the additives in any sequence at a temperature of 60-80/sup 0/ by mechanical stirring. On the five TO samples the \*antioxidative\*, demulsifying, and anticorrosion properties by comparison with the prototype were investigated. It was shown that the obtained TO possesses improved anticorrosion properties (time until the appearance of \*Kr\* (staining.), up to 60 h as against 35 on the prototype) and demulsifying properties (quantity of water separating on breaking the emulsion 10 mg/L as against 65 mg/L on the prototype) for an

\*antioxidative\* stability equal to that of the analog. The TO is designated for use in various turbo-units, in the first place in marine steam turbine units, where there is the probability of contact of the TO with seawater. Use of the TO makes it possible to increase the service life of the mechanisms, to reduce the amount of \*oil\* mixable in the form of an emulsion (by a factor of 1.5 to 2), and to lower the operating expenses.

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